

Encyclopaedia of Yoga for Common Diseases

Volume I

- **Heart Diseases**
- **Diabetes**
- **Backaches**
- **Arthritis**
- **Asthma**

Volume II

- **Skin Diseases**
- **Hypertension**
- **Obesity**
- **Headache**

Volume III

- **Alopecia (Baldness)**
- **Constipation**
- **Stress**

Volume IV

- **Depression**
- **Menopause**
- **Impotency**

Volume V

- **Personality Disorders**
- **Stomach Diseases**
- **ENT Diseases**

Volume VI

- **Amnesia (Loss of Memory)**
- **HIV and AIDS**

Encyclopaedia of Yoga for Common Diseases

In 6 Vols.

Vol. I

**Heart Diseases, Diabetes, Backaches,
Arthritis and Asthma**

Yoga Ratna Dr. H. Kumar Kaul



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obesity and headache -- v 3 Alopecia (baldness),
constipation and stress -- v 4 Depression, menopause and
impotency -- v 5 Personality disorders, stomach diseases and
ENT diseases -- v 6 Amnesia (loss of memory), HIV and
AIDS.

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Prânayâma--Therapeutic use--Encyclopedias

*Dedicated to my revered father
Baigash (Shri D.N. Kaul)
who strived to attain Sunnum Bonum of
life through Yoga.*

Foreword

The highly sophisticated modern man is intellectually brilliant, scientifically analytical, flamboyantly hyperactive, and fiercely ambitious, but unfortunately he is physically disease-ridden, mentally depressed, morally decrepit and spiritually bankrupt. The resultant rank materialistic life has made man a complex-chaotic entity, and he is blissfully ignorant of the divinity within himself and his potential to be ever happy. The real answer to the above is not to denounce or renounce materialism, which has come to stay, but have a firm material base, with the mind intent on acquiring spiritual enlightenment.

Thus, while the outer material world is fantastic, the inner world of body and mind is in shambles, making man a helpless victim of degenerative diseases. Hence, this book "Encyclopaedia of Yoga for Common Diseases" by Dr. H. Kumar Kaul is a boon to mankind. In his characteristic lucid exposition, Dr. Kaul has indicated how diabetes, declared by modern medicine as incurable, can be cured by yogasanas and pranayama. He also says that shallow breathing by man which exposes him to many physical and mental problems, can be erased by pranayama.

Aware of the fact that at present indisciplined eating habits are on the increase causing diabetes, the author has stressed on the importance of proper diet, consumed with discipline.

The author has also explained how the disease of diabetes, which is dangerously subtle and tends to slowly eat into vital organs, has been in existence from

ancient times, and at present is rampant throughout the world, both among old and young, rich and poor as well. Some statistics have averred that India at present enjoys the dubious distinction of having the largest percentage of diabetics in the world. Further, like other degenerative diseases, diabetes is inherited from the parents. Hence, it is imperative that this book should be studied carefully and contents practised assiduously, not only for cure but also for prevention.

Dr. Kaul, with his extensive knowledge, has aptly commenced his book with a quotation from Dhammapad, which avers, "no one helps us but ourselves", whether to cure diseases like diabetes or achieve ultimate peace and happiness. In fact, Yoga in its totality beckons man to find physical health and mental peace in oneself, and finally realise God in oneself.

The existing religions so far have not only failed to bring peace and harmony but also brought unfortunately discord and dissensions among people. All the "Isms" have also failed to solve man's problems and bring happiness.

Hence, Yoga in its "Totality" ("Poorna Yoga" as it is also called) appears to be the answer. While Hatha Yoga brings health and strength through asana and pranayama, Karma Yoga with devoted action followed by ready acceptance and yagna-spirit of sharing, ushers in prosperity and quietitude, and Bhakti and Gnana Yogas bless man with ultimate bliss. In fact, Raja Yoga helps man acquire all these, of course through different techniques. Unfortunately, there are very few "Poorna Yoga" personalities, like Lord Krishna in any age.

Hyper-activity aimed at increased productivity and consequent wealth, followed by physical and mental ailments, appears to be the order of the day. The author, at the age of 70, is a shining example of one who is

"hyper-active", engaged in all-round production, yet endowed with physical health, mental peace and spiritual knowledge. This achievement has been possible for him because of his being a devotee of Purna Yoga.

Dr. Kaul is popular with the Yoga community of India. May he, by God's grace and the powers attained by him through Poorna Yoga, live a hundred years and be a torch-bearer of all Yoga ideals.

Preface

Modern man, mesmerized by the glitter of luxuries provided by the present technological civilization, has unfortunately lapsed into laziness where the discipline of the body is concerned and failed to mentally rediscover his own divine nature. Further, in view of the existing cut-throat competition, limitless ambition, enormous thirst for wealth, combined with irresponsible indulgence in food and sex, have hardened our hearts, silenced our scruples and corrupted our moral base leading to heart, diabetes, depression and other diseases.

The book "Encyclopaedia of Yoga for Common Diseases" has aptly described in detail how some diseases at present pose a major challenge to life and longevity. Just as business management is most important, whether it is hotel or hospital, household or industry, the correct management of all the organs of our body is essential. The key organ that works non-stop from birth to death all the 24 hours, is the heart. For the heart to be healthy one must entertain healthy thoughts in the mind, and adopt yogic way of life. In fact, holistic health is essential for one to have a healthy heart.

In the treatment of many diseases, unnecessary medication is discouraged, as most drugs have harmful side effects. As a cure the book "Encyclopaedia of Yoga for Common Diseases", prescribes yoga in its entirety. Hatha Yoga for the body, Raja Yoga for the mind and Gnana Yoga for scaling spiritual heights. The yoga in its entirety has been detailed in the book.

Coming to the subject of cure, the books stress the important role of Asanas practiced with Pranayama. Asanas without pranayama degenerate into mere physical jerks. Yogasanas not only aim at strengthening the inner organs like the heart, the lungs, digestive organs, and endocrine glands but also bring about development of body and mind with regular practice of yogasanas with pranayama most ailments can be nipped in the bud.

Many ladies, who work both in the house and outside as well, tend to believe that they need no yoga or any exercise. I wish to inform such ladies to perform selected Asanas with pranayama to lead a disease-free life to enjoy both health and beauty.

About Pranayama, it is said that "To breathe is to live and to be alive is to breathe." The prevalent abundant pollution, stressful conditions of life, faulty food habits, faulty style of living—all make pranayama absolutely essential. In each inhalation we breathe in both oxygen and "prana" otherwise called vital force "Cosmic Energy". While the oxygen goes to the lungs to purify the blood, the prana is stored in the nervous system. Higher types of Pranayama help to make man to spiritual heights. "Food is thy Medicine," is a wise saying from a great man, which very few follow at present. Increasing number of palatable dishes, that only cater to taste are flooding the market. Errors in diet can give rise to many ailments and diseases. Lord Krishna told Saint Udhava, "Jitam Sarvam Kite Rase," he who controls taste controls everything. In the book Balanced Diet and Yogic Diet have been discussed in detail.

In the relentless pursuit of wealth, power and position and all the things that follow them many have become "work-o-holics" with no capacity whatever to relax and sleep properly. Such people take recourse to "drugs, happy pills, tranquilizers," smoking and alcohol. These may give a temporary relief, but ultimately land them in

diseases—physical and mental. In fact, such people are potential heart-disease patients. Jogging and other physical exercises tend to strain the heart. On the other hand yogic relaxation in Shavasana with rhythmic breathing gives “Super-relaxation,” providing required relaxation and rest to both body and mind.

Yoga treats human body as a flower. Yogasanas give exercise to every system and every organ in the body. The word yoga has a long history. It is an integral subjective science. Its divisions into spiritual, mental or physical cannot be separated from each other. The word yoga is derived from the Sanskrit root “yujir” meaning “to yoke” or “union” or “to join” Viyoga is the opposite of this implying “Separation”. Yoga is the restoration of “Swaroopa” or absolute peace. Yoga is equanimity, serenity and control of the senses and the mind. Yoga is a technique, a way of life, a path, a method that has something to offer to everyone, men and women, irrespective of age, faith or clime. No branch of yoga is more popular and more misunderstood than the Hatha Yoga. The word “Hatha” is derived from the ancient Sanskrit words “Ha” and “Tha” meaning The Sun and The Moon. These symbols refer to the metaphysical and physical aspects of yoga. Our physical and mental faculties must be so trained that they shall function with rhythm and harmony. Yoga is an ideal system for attaining harmonious development of body, mind and mental health. Patanjali states in his “Sutras” that harmonious development of body, mind and soul can be obtained through the eight limbs of yoga:-

1. Yama: (Abstinence) moral conduct, truthfulness, non-covetousness.
2. Niyama (Observances) of cleanliness, contentment, self-discipline, study and self-surrender to God.
3. Asanas (Right postures).

4. Pranayama (Breath control) control of prana by regulating breathing processes of inspiration, expiration and retention of breath.
5. Dharna (Concentration) fixing the mind on one subject or point.
6. Pratyahara (Sense withdrawal) turning the senses inwards and withdrawing them from external objects.
7. Dhyana (Contemplation) or Meditation keeping the mind fixed exclusively on one subject or idea for something without any interruption.
8. Samadhi (Self-realisation) super conscious experience in trance where enlightenment or union with self takes place.

Because of numerous requests from patients and yoga students I have undertaken to write this book so that even in the absence of a teacher one can practise daily this science of yoga to maintain good health. But it is desirable to get training from an expert yoga teacher. In the course of writing these books on common diseases I have been inspired by the tenacity, wisdom, and intellectuality of Yogi Ram, a great yoga luminary; his words of blessings that have come to me in the form of foreword are like drops of nectar to me.

I have been inspired by the following yoga luminaries for their most valuable opinions and exhortations. My meetings with them have dispelled many doubts and removed many confusions hovering in my mind.

1. H.H. The Dalai Lama (Macdolganj)
2. H.H. Jagat Guru Kripala ji (Barsana)
3. H.H. Swami Krishnanand ji (Rishikesh)
4. H.H. Swami Akhlesh ji (Ara, Bihar)

I am deeply indebted to Dr. Naresh Kumar Goyal, M.D., an eminent Cardiologist of Barnala for providing me the authentic literature on heart diseases and depression.

My thanks are also due to Dr. K.C. Sidana, M.S. of Barnala and Dr. Hari Gopal Gupta, Prop. Surgical Clinic of Barnala for their valuable views on yoga.

My heartfelt thanks are due to Dr. Jiwan Singh Komy of Barnala who, quite generously, placed all authentic literature on yoga at my disposal for thorough perusal. I am extremely grateful to my friend Sh. Praveen Mittal, Managing Director of B.R. Publishing Corporation, New Delhi who has evinced lot of interest and taken pains to publish these books on common diseases.

I have made this humble attempt with a hope and confidence that these books will serve the readers as self-learning guides regarding some common diseases and their cure through the system of yoga.

I feel convinced that people can be initiated into yoga provided they show a will and faith to practice it. In the words of Swami Shivananda, "Man is the master of his own destiny. He sows an action and reaps a habit. Sows a habit and reaps a character. Sows a character and reaps a destiny." I shall feel my humble attempt amply rewarded if it creates sustained interest in the readers for the system of yoga. "Sarvey Bavanti Sukhina"—Let all be happy and healthy!

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Introduction

Heart Diseases

Heart diseases and other ailments owing to high blood pressure are at the top of the list among the major causes of death and disability. Many people succumb to the fatal stroke of a heart attack at the prime of their life. Today, cardiac diseases pose a major challenge to life and longevity. Life style has a major role in the cause and cure of many modern diseases including heart attacks. Human heart is much more than a muscular pumping machine pushing blood for the body needs. Heart goes on working non-stop even when other organs may be having a little siesta. Both internal environment (milieu interior) and external environment (milieu external) are important for the well being of the heart.

External environment includes the diet we eat, the air we breathe, the people we meet and the unpleasant situations we face daily. Although modern drugs and surgical wonders have given a new lease of life to many yet the laser, stents and bypass surgery are beyond the reach of common man. The state budgets are also silent on such costly treatment. Prevention of heart diseases and hypertension should be through hygienic measures, life style modifications and non-drug means such as (1) Yoga, (2) Balanced diet comprising more vegetable and fruits and less of fats, (3) Avoiding excess of salt and alcohol consumption, (4) Avoiding smoking, (5) Avoiding sedentary life style, (6) Facing stressful situations with a positive attitude and mental relaxation through study of religious texts, music and meditation.

If a person is having high blood pressure, diabetes or high blood liquids like cholesterol, triglycerides etc. one

should start appropriate drug therapy, pranayama and yogasanas to keep the blood pressure, blood sugar and blood liquids in normal condition. Yogatherapeutic measures have, in fact, not only made the lives of victims of heart disease free from pain and other symptoms, but have certainly saved many from pre-mature death.

In India, about two decades ago, heart attacks were rare in the youth. It will not be long before heart disease becomes number one killer in India. The two important factors of heart disease are tension and diet. As compared with our fore-fathers, the tensions which the modern man has to face have grown a hundred fold. As a result of mental tension, man is prone to smoke, drugs and drink to get feeling of relaxation. He takes recourse to tranquillisers, pills, alcohol etc. but all these things make his mind sick.

Diabetes

Diabetes is a lingering and baffling disease. Most of the diabetics lead a normal and long span of life because they have learnt the importance of preventive, Curative techniques and have fair knowledge of restricted diet. There are certain diseases namely surgical where Yoga is silent but there are certain diseases where yoga has shown wonderful results. The information disseminated in this book should serve as guideline to the diabetic. Unless a diabetic has strong will positive approach, a desire to learn and follow seriously the suggestions, he cannot derive much benefits. Of course doctor's advice is an essential pre-requisite for the diabetic.

Backaches

This part deals with backache causes consequence and yogic cure has been written to fill up the gap of communication between the patient and the doctor. The number of patients suffering from backache is rapidly

increasing. The book has been written for educated laymen who are ignorant about their own disease and ailments. Technical terms have been avoided and substituted with simple and familiar terms. The book has been written after the personal experience of the author. The yogic treatment for backaches has been highlighted. People generally take asanas and pranayama in a perfunctory manner. They do not know many things about yoga system which is a scientific system. Yoga is both art and science. The purpose of this book is to present yoga especially Hatha Yoga in more detailed and accurate way. The treatment chosen is scientific of course there are many problems and deformities and disorders of the spine which require surgical treatment. Yoga is silent regardly these deformities.

Some disorders of the spine, congenital, infective, developmental and degenerative need surgical corrections. In spine bifida occulta there is merely a radiological defect between the laminae. In Myelomeningocele, the spinal cord is exposed to the surface as a plaque or nervous tissue. It is invariably associated with muscle paralysis, sensory loss bladder and bowel incontinence and deformities. It may be present from the fourth thoracic to the first sacral vertebra. However it is more common at the lumbosacral region. This type is associated with the usual complications of paraplegia, bladder and kidney infections, skin ulcerations etc. It may also be associated with deformities and is prone to develop pathological fractures, meningitis as well as hydrocephalus. Then there is Pott's disease of the spine known as caries spine or Tuberculosis of the spine. It is the tubercular infection of the vertebrae. This disease is more common in children between the age group of 6 and 12 years. This disease may spread from the primary focus to the

adjacent vertebra. The disease destroys the bone substance of the vertebra and may lead to its collapse due to the formation of a cavity.

Arthritis

It is a rare adult who never experiences some form of arthritis or rheumatism. These diseases are common and are among the oldest known to man. A great deal of new knowledge understanding and treatment is available today. Medical scientists have discovered new leads in their search for the causes of various forms of arthritis. Rheumatic diseases are by far the most commonly occurring chronic illnesses in our country. Rheumatism is a general term used to describe stiffness and aching pain. Though most rheumatic diseases involve joints, many connective tissues other than joints are also affected. Arthritis means inflammation of a joint. Though arthritis is a frequent part of most rheumatic diseases. It is certainly not the only part.

This part deals with arthritis—types of arthritis, causes, and yogic cure and treatment has been written for educated laymen who are ignorant about their own disease. The technical terms have been avoided and substituted with simple and familiar terms. This part has been written after the personal experience of the author. The yogic treatment particularly Asanas and pranayama exercises have been highlighted. People generally take Asanas and Pranayama exercises lightly without knowing that specific Asanas have specific effects. Generally while doing Asanas concentration, breathing and sequence are not kept in mind.

Asthma

This part deals with respiratory system in general and asthma and allergic disease in particular. The meaning

of asthma, the causes and yogic cure and treatment have been dealt with in detail. With the advancement of industrialisation, urbanisation the environmental pollution has increased rapidly so have diseases like asthma and allergies. The book serves as a guide for educated layman regarding asthma. The technical terms have been avoided and used only when and where necessary. Asans and Pranayama is essential for everyone. But for a patient of asthma, asans and pranayama are must. The diseases of respiratory system particularly asthma cannot underestimate the importance of breathing and pranayama. The lining of the nose continues into the bronchial tubes. Asthma in most cases is an extension of nasal allergy into them. About 40 percent of patients who have nasal allergy develop asthma. The same substances that cause swelling and increased secretion in the lining of the nose produce similar results in the lining of the bronchial tubes. The bronchial tube passages become narrower because of swelling of their linings, contraction of the muscle tissue in the broachial walls. These cause difficulty in breathing and induce coughing attacks. Because asthma tends to become more severe and more complicated as it persists, it should be taken care of as early as possible.

The home is the centre of the family's health for a number of reasons. It is a place where the same people constantly congregate. Home is also the place where the individuals in the family react upon one another, so that the actions of one influence all. Home should be a neat and clean place of rest, comfort, and love. Home is the family's castle. But home is more than a place. It is a concept and an ideal where cleanliness and love rule.

Urbanisation along with industrialisation and commercialisation have alienated the man from the nature. This disharmony with nature has introduced

artificiality in the life and living patterns of the human beings. Human society has reached a stage where race for mechanical comforts and ever increasing fastness of life are putting unbearable strain and taking so much recourse to drugs medicine that doctors and hospitals are unable to cope with the rush of the patients.

In Yoga we have all reservoirs of life to draw upon of which we do not dream. It formulates the methods of getting at our deeper functional levels. The Yoga discipline is nothing more than the purification of the body, mind and soul and preparing them for the beautiful vision.

—**Dr. S. Radhakrishnan**

PART-I

HEART DISEASES

1

Structure and Functioning of the Heart

Heart is a hollow muscular organ which receives the blood from the veins and propels it into the arteries. It is divided by a musculo membranous septum into two halves right or venous and left or arterial each of which consists of a receiving chamber (atrium) and an ejecting chamber (ventricle). The heart is a cone shaped, hollow, muscular organ, having the base above and the apex below. The apex inclines towards the left side. The heart weighs about 300 grams. The heart lies in the thorax between the lungs and behind the sternum and directed more to the left than the right side.

The heart is about the size of a closed fist. The adult heart weighs about 220-260 grams. It is divided by a septum into two sides, right and left. There is normally no communication between these two sides after birth. There are two atria, right and left, and two ventricles. The atria and ventricles of each side communicate with one another by means of atrioventricular openings; which are guarded by valves; on the right side by the tricuspid valve and on the left the mitral valve. The atrioventricular valves permit of the passage of blood in one direction only i.e. from atrium to ventricle and they prevent the blood flowing backwards from ventricle to atrium. The tricuspid valve is composed of three flaps or

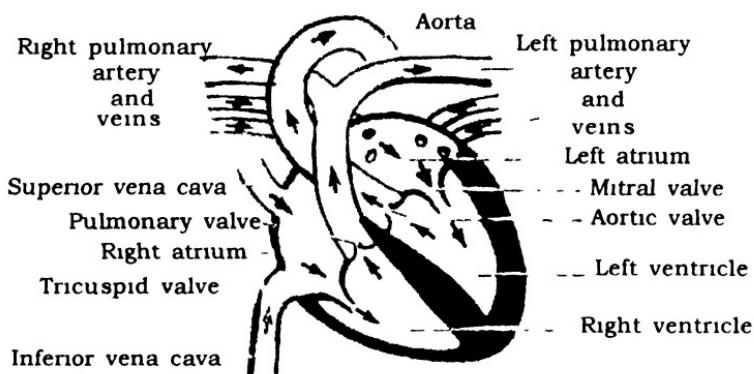


Fig. 1.1: Diagram of the Circulation Through the Heart
The direction of the blood flow is indicated by arrows.

cusps. The heart is composed of a specialised cardiac muscle and is surrounded by a membrane called pericardium. The heart is lined by endothelium; this layer is called the endocardium. The valves are simply thickened portions of this membrane. The thickness of the heart valve is composed of a network of heart muscle fibres and is known as the myocardium. The heart, thus, consists of three layers:-

The Myocardium or the middle muscular layer;

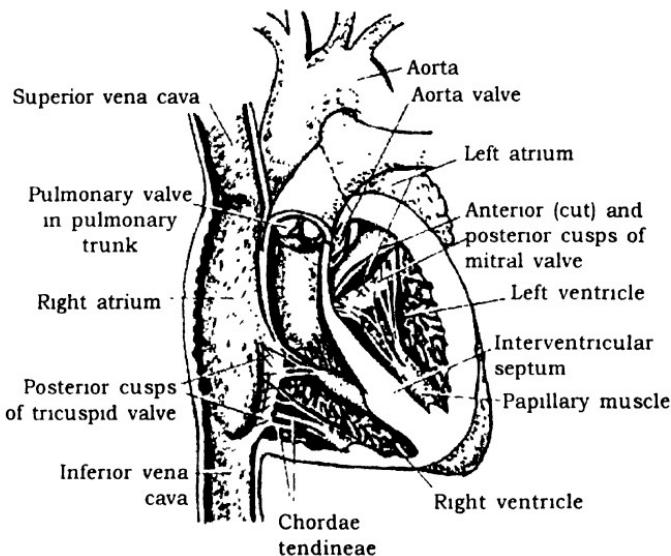
The pericardium or the outer covering;

The endocardium or the inner lining.

The muscular walls of the heart vary in thickness; the ventricles have the thickest walls; the walls of the left are thicker than those of the right ventricles, because the force of contraction of the left ventricles is much greater. The walls of the atria are composed of thinner muscle. The interior of each of the ventricular walls is marked by thickened columns of muscle.

The superior and inferior venae cavae empty their blood into the right atrium. The opening of the latter is guarded by semi-lunar valve of eustachius. The

pulmonary artery carries blood away from the left ventricle. The openings of the aorta and the pulmonary artery are guarded by the semi-lunar valves. The valve between the left ventricle and the aorta is called the aortic valve and prevents blood flowing backwards from the pulmonary artery into the right ventricle. The right and left coronary arteries are the first to leave the aorta, these then divide into smaller arteries which encircle the heart



The Interior of the Heart (Simplified)

Fig. 1.2: The Circulatory System

and supply blood to all parts of the organ. The return blood from the heart is collected mainly by the coronary sinus and returned directly into the right atrium.

Although the action of the heart is rhythmic in character, its rate of contraction is modified by impulses reaching it from the vagus and sympathetic nerves. Normally, the heart is all the time beating being inhibited

by the vagus, but when the vagal tone or 'break' is removed to meet the needs of the body during exercise or emotional excitement, the rate of heart beat increases. Conversely, during physical rest and relaxation and emotional tranquillity, it decreases. The heart is a pump, and the events which occur in the heart during the circulation of the blood are known as cardiac circle. The heart's action originates in the sino-atrial node (S.A.) when the atria contract, the electrical impulse moves along the bundle and the ventricles then contract. This action is described in two parts contraction or systole and relaxation or diastole. The heart beats continuously night and day throughout life. The contraction of the atria is short that of the ventricles is longer and more forcible, and that of the left ventricle the most forcible or any, as it has to force the blood throughout the body to maintain the systemic arterial blood pressure.

Two sounds may be heard during the action of the heart due to the passive closing of the valves. The first sound is due to the passive closing of the valves. The first sound is due to the closing of the atrioventricular valves, and the contraction of the ventricles; the second of the closing of the aortic and pulmonary valves after the contraction of the ventricles. The first is long and dull and the second short and sharp. Thus, the first sound like "lubb" and the second like "dup". Normally the heart makes no other noise. But if the flow of blood is rapid or if there are deformities in the valves or other chambers there may be extra noises, called "murmurs". The cardiac impulse or apex beat is the impact of the left ventricle against the anterior wall of the chest, occurring during the contraction of the ventricles. This impulse can be felt in the fifth left intercostal space, about 9 cm from the middle line of the sternum.

Blood is the fluid tissue composed of two parts. The inter cellular substance is a fluid called Plasma, in

which float formed elements the blood cells or corpuscles. The total volume of blood forms about one-twelfth of the weight of the body or about 5 litres. About 55 per cent, a little over half the volume, is fluid, the remaining 45 per cent of the volume being made up of the blood cells. This figure is described as the haematoent or packed cell volume, ranging from 40 to 47. The volume of blood is constant in health, being regulated to a great extent by the osmotic pressure in the vessels and in the tissues. The plasma also carries gases, oxygen and carbon dioxide, internal secretions, enzymes and antigens. There are three varieties of blood cells. Erythrocytes or red cells, Leucocytes or white cells and Thromboeytes or platelets. The red cells or Erythrocytes are small circular bi-concave discs, so called because they are concave on both sides so that when looked at from the side, they appear like two crescents placed back to back. There are about 5000.000 red cells in each cubic millimetre of blood. They are a pale buff colour when seen singly, but in masses appear red and give the colour to the blood. In structure they consist of an outer envelope or stroma which encloses a mass of haemoglobin. The red blood cells need protein for their structure derived from the amino-acids, they also need iron, so that a balanced diet containing some iron is necessary for their replacement. Women require more iron as some is lost in the menstrual flow. In pregnancy the requirements are greater to supply iron for the developing fetus and for the milk in lactation. The red cells originate in bone marrow, especially in that of the short, flat and irregular bones in the cancellous tissue at the ends of the long bones and in the marrow in the shafts of the ribs and in the sternum. In process of development in the bone marrow the red cells pass through several stages, at first are large and contain a nucleus but no haemoglobin; they are next charged with haemoglobin and finally lose their nucleus and are then

passed out for circulation in the blood. The average life of a red blood cell is about 120 days. The cells then wear out. They are disintegrated in the reticuloendothelial system, mainly in the spleen and liver. The globin of the haemoglobin is broken down into amino-acids to be used as protein in the tissues and the iron in the haem is removed for use in the formation of future red blood cells. The rest of the haem is converted into bilurbin, the yellow pigment. When bleeding occurs red cells with their oxygen carrying haemoglobin are lost. In moderate haemorrhage these cells will be replaced during the following weeks provided a balanced diet containing iron is taken, but if the percentage of haemoglobin falls to 40 or below, a blood transfusion may be needed.

Blood is to act as transport system of the body, conveying all chemical substances, oxygen and nutrients required for the nourishment of the body in order that its normal functions may be fulfilled and carrying away carbon dioxide and other waste products. The red cells convey oxygen to the tissues and remove some of the carbon dioxide.

The white cells provide many of the protective substances and by phagocytic action some of the cells protect the body against bacteria. The plasma distributes proteins needed for tissue formation; it services the tissue fluid by which all cells receive nourishment, and forms the vehicle by which waste matter is conveyed to the various excretory organs for elimination. The internal secretions, hormones and enzymes are conveyed from organ to organ by means of the blood. All tissues need an adequate supply of blood, which depends on a normal arterial blood pressure being maintained. In the lying position, the blood pressure in the body is level, but when sitting or standing the blood to the brain has to be pumped upwards. The brain in

particular needs a continuous adequate supply of blood. If deprived of blood for longer than 3 to 4 minutes, irreversible changes take place and some brain cells die. Therefore, in cardiac arrest from any cause urgent immediate treatment is essential to get the heart working again. Arterial blood pressure is the force of pressure which the blood is exerting against the walls of the blood vessels in which it is contained. This pressure varies during the cardiac cycle. During ventricular systole when the left ventricle is forcing blood into the aorta the pressure rises to a peak. During diastole the pressure falls, the lowest value it reaches is called diastolic pressure. Systolic blood pressure is produced by the heart muscle which derives the contents of the ventricle into the already stretched arteries. The blood pressure depends partly on the force and volume of the blood pumped by the heart and partly on the contraction of the muscles in the walls of the arterioles. There are several kinds of blood vessels. Arteries and arterioles which convey blood away from the heart, always carry oxygenated blood. Venules or veins carry blood towards the heart and except the pulmonary veins, always carry deoxygenated blood. Capillaries are very minute blood vessels in which arterioles terminate and venules begin. Certain arteries such as those carrying blood to the brain and some of the vessels of the lungs, liver and spleen do not terminate in ordinary capillaries.

Veins carry blood towards the heart. They begin as small vessels formed by the union of capillaries. These small veins unite and become larger veins, eventually forming the venous trunks which increase in size as they near the heart. Veins are more numerous and larger than arteries. The deep veins or *venae comites* accompany the main arteries and are named after them. Some arteries have two accompanying veins. The superficial veins lie immediately beneath the skin, and

communicate with the deep veins at certain points before the great venous trunks reach the heart. The brachiocephalic veins formed by the union of the subclavian and internal jugular veins unite behind the first costal cartilage to form the superior vena cava. The right brachiocephalic is shorter than the left vein. The brachiocephalic veins receive the blood from the head and upper limbs and in addition receive veins from the upper part of the thorax including the mammary veins. The internal jugular vein lies deep in the neck, it contains the blood which has drained from the interior of the skull and it receives also the lingual, facial and thyroid veins. The external jugular vein is a superficial vein formed slightly behind and below the ear by the union of veins draining the regions of the side of the face and the ear. The superficial veins of the upper extremity begin as a network of small veins in the hands.

2

Common Heart Problems

We are living in an age of Explosions, Explorations and Paradoxes. This is also an age of hi-tech and management. It may by hotel or hospital, household or industry, business management is the most popular Vacation today. Well planned managements contribute to the success of organisations and individuals. What is true of Managements is true of Heart the most important organ of our body. Heart needs great care for its proper functioning and also for our health. Management strategies are needed for the proper functioning of heart. Preventive strategy demands regular checkup, life style and doing regular Yoga and Pranayama Exercises. Curative strategies imply the measures to be taken in case of breakdown of this most important organ in our body.

Symptoms are indications of diseases. Various symptoms and some common defects of the heart are:-

1. Certain holes and blocks present from birth disturbing the circulatory system.
2. Disorders of the valves due to rheumatic fever and rheumatic heart disease.
3. Clogged coronary arteries that supply fuel (Oxygenated blood) for the heart giving rise to anginal pain and heart-attacks.

4. Mental or physical fatigueness due to over work, stress and tension, high blood pressure (hypertension).
5. Defective wiring system (Conduction system) resulting irregular heart beats.
6. Flabby heart muscles disease (Cardiomyopathy) due to excessive smoking, excessive alcohol, infections and diabetes.
7. Certain disorders in other organs or systems.

In the body may adversely affect the heart. The malfunctioning of thyroid, overactivity, (hyperthyroidism) anaemia, infections, tuberculosis which affects the outer covering of the heart. Basically there are four cardinal symptoms that make us suspect heart disease.

1. Chest Pain
2. Palpitation
3. Breathlessness
4. Fatigue.

1. Chest Pain

One of the many causes of chest pain is heart trouble. It is that Cardiac pain which is different from other pains. Central chest pain, radiating to either or both arms, more often the left arm associating with the feeling of Constriction in chest. Non-cardiac causes of chest pain include cervical spondylosis, peptic ulcer, gall bladder disease herpes and anemia. The common cause of cardiac chest pain (angina and myocardial infarction) is the narrowing of coronary arteries due to the process called atherosclerosis. The aggravating risk factors for this disease are high blood cholesterol, smoking and high blood pressure, smoking increases the risk of CAD (Coronary Artery Disease) by three to five times. In some western countries smoking has significantly decreased

and is socially looked down upon. In contrast in India, smoking is increasing particularly in the younger generations. As the demand is falling in west tobacco traders are dumping this atherogenic (blockage inducing) material in the Indian market. Anginal pain can also be due to narrowed or leaky aortic valve. Replacement or Repair of the involved needs surgical treatment.

2. Palpitation

Palpitation is the forcible pulsation of the heart, perceptible to the patient, usually with an increase in frequency with or without irregularity in rhythm. Normally one is not aware of the continuous beating of heart but in certain diseases symptoms, an uncomfortable awareness occurs. Sometimes causes of palpitation can be non-cardiac like anemia and thyrotoxicosis. The cardiac causes of palpitation include rheumatic heart disease with leaky valves. Both fast heart beat and very slow heart beat can give rise to palpitation.

Pulse is the rhythmical dilation of an artery produced by the increased volume of blood thrown into the vessel by the contraction of the heart. The examination of the pulse may reveal no abnormality except that it is faster 100 to 110 beats per minute. When pulse beats are irregular either very fast 150 beats per minute or very low 30 beats per minute. It may be sometimes due to some damage to the area of the heart where from the pulse beats start.

3. Breathlessness

Breathlessness implies breathing uncomfortably or with difficulty. Breathlessness may occur not only during work or exertion but at times also at rest due to heart disease. The reason for the symptom in heart patients is pooling of blood and raised pressure in the pulmonary,

circuit (lungs) due to narrowed or leaking valves in the left sided chambers of the heart that either receive blood from the lungs (mitral valve) or eject out blood to the body (aortic valve). Breathlessness also occurs due to high blood pressure and it is the cardinal feature in patients with heart muscle disease (Cardiomyopathy). It is also usually associated with body swelling of neck veins and enlarged liver. Heart attack and angina may also result in breathing difficulty at rest or during exertion. Lung disease and anemias are other major causes of breathlessness.

4. Fatigue

Fatigue is that state following a period of purely physical and confined to a single organ, muscles or gland after a period of prolonged activity. As a symptom of heart disease, fatigue is a manifestation of poor circulation of oxygenated blood to muscles. Giddiness and transitory loss of consciousness are two other symptoms of importance in the management of heart patients. The corrective or curative treatment of heart disease depends on the right diagnosis of the defect. Listening to the patients symptoms carefully, detailed physical examination, and necessary investigations often help in pin-pointing the disease. After having rectified the defect. Certain preventive measures are necessary to avoid recurrence of such problems.

The use of unnecessary medication specially sedatives, stimulants, drugs, alcohol and smoking should be avoided. Early treatment of sore-throat with anti-biotics during childhood will prevent rheumatic fever which is the cause of deformed valves in later life. Preventive treatment of heart attacks and angina include avoiding smoking and alcohol. Early detection and treatment of hypertension, control and treatment of high blood pressure and high blood cholesterol by diet

and drugs and doing regular Yogasanas and Pranayama exercises. Preventive treatment of hypertension include avoiding excess salt, weight control. Regarding diet balanced diet has been discussed in another chapter. Here, suffice it to say that diet rich in vegetables, fruits and vitamins especially vitamin E and C and folic acid are helpful in prevention of atherosclerotic, heart disease. Cholesterol comes only from animal origin like meat, milk and dairy products.

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Obesity or fatness has direct relation with disease. In many developing countries including India, it is undernutrition and in developed countries overnutrition responsible for many cases of heart attacks and hypertension.

Obesity or fatness has direct relation with disease and death. Control obesity i.e., waist bigger than hips can sometimes be a risk factor for heart attacks. With the increase in weight the cholesterol also increases and this is related to diet. The good cholesterol called the HDL (High Density Lipoprotein) comes down as the body weight goes up. HDL is considered a protective factor against heart attacks. Overweight shortens life span, and over-weight is the result of over eating rich foods such as sweets, fried items, ghee and butter. Our food consists chemically of carbohydrates, proteins, fats, vitamins, minerals and water. Animal fats such as ghee and butter contain saturated fatty acids and hence they are fats which contain both saturated and unsaturated fats in different proportions.

Cholesterol is a very important constituent of our body, used in its various tissues and activities. In the

brain and nervous tissue, it acts as an excellent unsulator so that electrical impulses travel unobstructed. Without it, electrical impulses travelling in the nervous in our body would get short-circuited. Brain contains a heavy concentration of it. Cholesterol is also the source of material for the manufacture of male and female sex hormones. Yolk (Yellow part of the egg) contains high cholesterol and is also manufactured in the body itself by the liver from carbohydrates, proteins and fats that we take in our diet. The liver is the main organ concerned with cholesterol which it can manufacture store and destroy. It has been established that the amount of cholesterol in the food has a great effect upon the blood cholesterol level.

Diabetes implies high level of glucose in the blood, so that some of it overflows into the urine. Usually it occurs due to deficiency of Insulin. It is a chronic disease and effects the utilisation of carbohydrates, fats and proteins. Diabetes can cause many complications mainly narrowing of the blood vessels called atherosclerosis. Coronary artery disease is common in diabetes. Diabetic patients are more prone to heart attacks than non-diabetic. Heart attacks are also common in those people who do not have diabetic but their glucose metabolism is found to be faulty, so that they can be labelled as pre-diabetics.

According to Dr. Rissam (Escort Heart Institute, New Delhi), the risk of CAD (Coronary Artery Disease) in the Indians is three to four times higher than in the white Americans, six times higher than in the Chinese, and 20 times higher than in the Japanese. The Indians are prone, as a community, to CAD at a much younger age.

In this age of competition and confirmity, the lust for money has hardened our hearts, silenced our scruples and corrupted our moral sense. They have caused

mental illness which is alarming and diseases such as cancer, diabetes, coronary thrombosis which are on the increase. Our culture is honey combed with dishonest pretences and disco influences. We are not what we pretend to be. The emotional stress imposed by modern competitive industrialised society bears impact on the development of heart diseases. Heart attacks have been found more frequent in those with great emotional stress. Death of spouse, divorce, marital separation from mate, detention in jail, death of some nearest and dearest one, serious personal injury, marriage, retirement from work, major change in behaviour of a family member, pregnancy, sexual difficulties, bankruptcy, in-law troubles, wife working outside the home, conflict with the boss, major change in social activities, major change in sleeping habits (a lot more or a lot less sleep) and shock. The symptoms of shock are due to the sharp and sudden reduction in the output of blood by the heart (cardiac output) resulting from heart injury. The term "Heart failure" does not imply that the heart has stopped functioning. It only means that heart muscles have weakened so much that they are not able to pump and supply blood to the body. According to Dr. Rissam, the prevalence of hypertension is increasing in the urban population as compared to the rural population. The prevalence of diabetes mellitus is about 20% in the middle age. Even a moderate elevation of glucose in Indians is associated with an increased risk of CAD (Coronary Artery Disease). Diabetics are particularly prone to severe fatal attacks as they do not get warning symptoms like angina as they pain perceiving nerves are numbed in them.

Gout is an inherited metabolic disorder occurring especially in men. Characterised by a raised but variable blood uric acid level. As a result of metabolism of food, some waste products results one of which is uric acid.

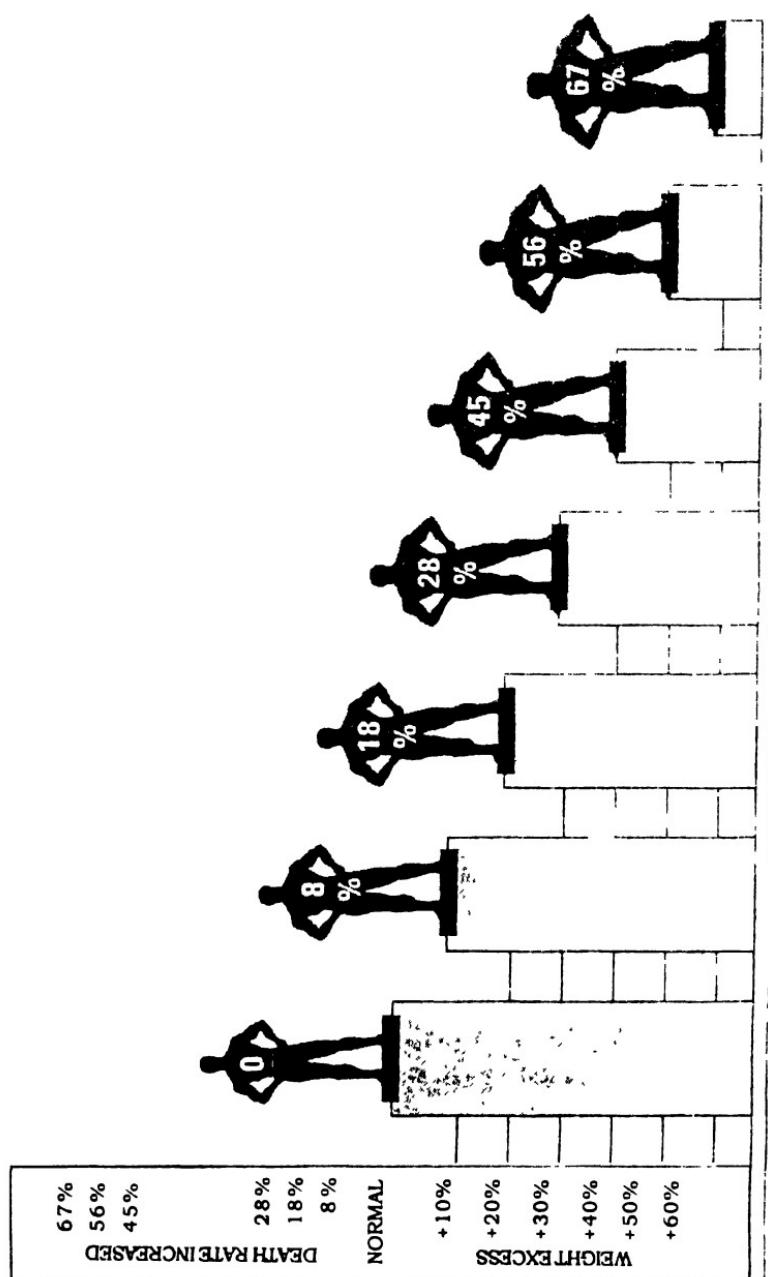


Fig. 2.1: Hazards of Overweight

In gouty patients, coronary arteries are more likely to become atherosclerosed.

Infectious diseases are rampant in India particularly in the poor. Various infections, viral and bacterial have been implicated for CAD in Indians. It is necessary to show strict adherence to the medical advice and treatment and to stop smoking, alcohol, fats, to keep optimal weight and to do Yogasanas and Pranayama regularly. In the industrialised countries there has been a continuing decline of CAD during the last three decades. This has been possible by focusing on public education programmes for modifying the known risk factors and by emphasising on healthy life style. This must become an example for the people in India.

3

Yoga, Meaning and Relevance

Yoga has a long history. It is an integral subjective science. Its spiritual, mental or physical import cannot be separated from each other. According to Panini, the Grammarian, the word Yoga is derived from two roots, viz. *Yujir* and *Yuja* one referring to Yoking (*Yujvir Yoga*), and the other referring to mental concentration (*Yuj Samadhi*) and to sense control. Yoga standing for mental concentration is the theme of the entire Indian systems dealing with yoga. It also implies the control of senses. Thus the second derivation of the word yoga consists in *Citta vrittinirodhah* i.e., the silencing of (all) activities in the mind's substance.

Vyasa too, in his commentary on patanjali takes reintegration (Yoga) and identification (Samadhi) as synonymous, Shri Gaddadhara, the teacher of logic (Nyaya) says: "Reintegration means identification (samadhi). It is of two kinds: conscious (samprajnata) and unconscious (asamprajnata). The union (Samyoga) of some part of one's being with anything, whatever it may be of which there is a desire to know the essential nature, even though it be beyond sensory, perception its instability is called "conscious identification" (sampranata samadhi). "Unconscious identification" (asamprajnata) is that mental union (Manah samyoga) which arises in some part of the self but which because of the absence of inward uplift and of perfected inward contemplation remains uncoordinated.

"Conscious identification" is the state of full cognition. This means that in this state the object of contemplation is actually witnessed and the mind is fixed upon it. This is characterised by the silencing of all thought except that of the object contemplated upon. Hence, conscious identification is the silencing of mental activity. With, as its result, the witnessing of the object of contemplation. Since it is defined as state in which nothing is cognized all notions must be abolished in unconscious identification. In this state there remains therefore nothing of the mind except the traces left by its previous activities. If this were not so, consciousness could arise again. All intuitive perceptions come within the realm of unconscious identification. According to Vedanta, yoga means supreme realization. Yoga is the reunion of the living self with the supreme self. According to the treatises on yoga, supreme realization is considered as the aim of all yogic practices. But the means of this realization as well as all intermediary stages are also taken to be included in the term yoga. The main obstacle to realization being the consistent activity of the mind, yoga is thus defined to silence the mind leaving all mental activity is yoga: "The silencing of the mental activities which leads to the complete realization of the intrinsic nature of the supreme person is called yoga."

The word yoga can also be used as an extension for knowledge, love, action etc. Since these are also means of liberation (moksha) and are thus the instruments of reintegration (Yoga). The activities of the mind are said to be five in number. These are ascertaining of facts (pramana) false knowledge (viparyaya or knowledge contrary to facts), imagination (vikalpa), sleep the experience of being unconscious and memory (smiriti). The modes of ascertaining the real nature of things are direct experience. Deduction therefrom and the

traditionally transmitted revolution. The mental activity which through sensory perception leads to exact knowledge of things as they constitute the ascertaining of facts through direct evidence.

Mental activity resulting from the generalization of categories is deduction (*anumana*) mental activity contrary to facts constitutes false knowledge and is the result of a defeat (either in the perception or in the object). Memory is exclusively the activity resulting from imprints left upon the mind's substance by former experiences. The mental activity of sleep is limited to the experience of happiness during sound sleep which gives rise to such memories as "I slept pleasantly".

The Mastering of Sensory Impulses

The limits of the physical body can never be transgressed without knowledge and thoroughly mastering the sensory impulses which govern the process of living. The most vital impulses delude us the most, thus safely protecting vital functions from dangerous interferences. That is why the vital instincts and rhythms can only be acted upon and mastered through a very expert technique. It is this technique which is called Yoga. The adept in Yoga, the Yogi, like the psychiatrist, goes straight to the root of the most powerful instincts, those which move forcibly hold us within the dominion of matter, and he is also to control his vital functions by a thorough knowledge of the particular processes and emotive regions through which the vital instincts holds sway over the body and the mind. Here the Yogi differs from the moralist for he holds that to neglect or ignore certain psycho-physiological factors is a sure way of remaining within their grip. The network of the instincts binds the gross to the subtle body and keeps us imprisoned. The knots of this network are strong and complex and, without the proper technique for

undoing them, we can never escape from our physical envelope but are kept always on the path of the individual and social instincts by which the continuity of physical life is assured. Yoga keeps aloof from emotional and sentimental impulses. It abides in "cold-logic" and is interested only in the technical possibility of supra-human realization. Yoga is not attained by him who eats too much, nor by him who abstains from food, nor by him who keeps oversleeps, nor by him who keeps awake. This Yoga which destroys pain is achieved by him who eats and behaves as is proper, whose all actions are led by reason, whose sleep and waking are regulated.

The Methods of Yoga

Basically, all physical and mental knowledge is, of necessity an experience. A conception uncorroborated by experience remains a speculation and we can never be certain of its reality. The extent of our knowledge is therefore limited by the greater or lesser extension of our perceptions. If in any way we extend the field of our perceptions, non-horizons immediately open up before our powers of knowing. In the field of sensory, perceptions, the microscope, the telescope, the instruments sensitive to all kinds of vibrations have extended according to their power and horizons of scientific knowledge.

Indian philosophers have asserted that all knowledge is built upon experience. But they maintain that an outward perception only is not a real knowing, and that the only way for us to know a thing completely, outwardly and inwardly, is to identify ourselves with it, only when we are one with it, can we know it in itself and not merely as it appears to be from an external point of view. This is the intention behind Yoga which refers to "identification, identification with Divinity being

realisation". By its very nature, sensory knowledge is limited to appearances. The ancient Indian thinkers speak of the world of appearance as the work of Maya, "the power of illusion", because its inner reality appears before us as if hidden by changing forms. However, deep our knowledge of a thing may be, however, near we may be to it, so long as we remain distinct from it, we cannot know it integrally.

On the eyes of a corpse an image forms like a reflection in water, but there is no faculty of consciousness to seize it, no memory to take its imprint. That which really perceives is our faculty of consciousness. It seizes upon the experience of the senses, which, were they separated from it, would be mere mirrors. The ancient Indian thought asserts that we can conceive of an Angel or subtle being which, free from a gross envelope and not bound by its limitations, can perceive all things. Might there not be likewise for our conscious some way by which it could cross the boundary of its bodily prison, know the freedom of limitlessness, and see, in their fullness, all things of which, through the intermediary of the senses, it can know only limited fragments. The realization of supra-sensory perception is one of the stages of that particular training which the Indians call Yoga. This training aims at the direct experience of all things through identification with them. All the Vedic scriptures are considered to have originated through this process and it is, therefore, only in Yoga that their key is to be found. Yoga is the guardian of Eternal Law, Yoga is the guardian of knowledge.

Without knowing the method of Yoga, no realization is possible. However, intent on learning, detached, knower of the law, self-restrained one may be, a God even cannot without Yoga attain liberation. Yoga is thus the technique of realization. It embraces all forms of

religious experience, all of which are based on Yoga, knowingly and unknowingly. Every form of knowledge, too, is ultimately a form of Yoga. Yoga is the means as well as the object of knowledge, it is through Yoga that Yoga can be known, through Yoga that inclination towards Yoga develops. He who through Yoga becomes freed from passion delights endlessly in Yoga.

The Yoga in Man

In recent times, Sri Aurobindo saw a new vision and possibility of advance in spiritual life. He realized that it should and could be possible for human race as such to rise to a new and higher status of living, a supramental in place of the mental which it now commands, but which is subject to partiality, fragmentaries and division. A supramental status of wholeness, sure of truth, is the development called for and needed in the present situation of human life. This, Aurobindo called "The Integral Yoga", the Yoga which should lift the integral nature of man, by a wide integral process of growth to a new integral consciousness. In the right view, both of life and of Yoga, all life is either consciously or subconsciously a Yoga. For we mean by this term a methodised effort towards self-perfection by the expression of the potentialities latent in the being and a union of the human individual with the universal and transcendent existence we see partially expressed in men and in the cosmos. But all life, when we look behind its appearances, is a vast Yoga of nature attempting to realise her perfection in an ever-increasing expression of her potentialities and to unite herself with her own divine reality. In man, her thinker, she for the first time upon this earth devises self-conscious means and willed arrangements of activity by which this great purpose may be more swiftly and puissantly attained. A given system of Yoga, then can

be no more than a selection or a compression, into narrower but more energetic forms of intensity, of the general methods which are already being used loosely, largely in a leisurely movement, with a profuse apparent waste of material and energy but with a more complete combination by the Great Mother in her vast upward labour. The true and full object and utility of Yoga can only be accomplished when the conscious Yoga in man becomes, like the accomplished when the conscious Yoga in man becomes, like the subconscious Yoga in nature, outwardly cater minus path and the achievement, say in a more perfect and luminous sense "All life is Yoga".

Relevance of Yoga: Psychological and Physiological Context

We are living in an age of explosions, explorations and paradoxes. We have conquered the unconquerable, and achieved things beyond the wildest dreams of our ancestors. Our cosmonauts have eclipsed Icarus and our scientists have penetrated to the heart of the atom. Inventions have altered the very condition of life. Science has changed our world into a place of abundance and plenty. But on the one hand, the unprecedented growth of the knowledge and privileges of man have taken place, on the other, due to ever-increasing ambitions, desires and competitions, his restiveness and maddening tensions have also increased by leaps and bounds. Materialism could not fill the chasm of spiritual and social dissatisfaction. Even today, the human being is as much destitute, suspicious, aggressive and restless as he was perhaps in the primitive age. Ever-increasing disease of insomnia, mental deformity, impulses opposing ethical values and destructive instincts are some of the common physiological and psychological problems facing man.

An important reason for this growing affliction is that the present day man, due to complexity of existing culture, can neither express nor fulfil his desires in a natural way, nor can he get rid of his ever-increasing ambitions. In the inner-self a storm of passions and outwardly a covering of civility are such two levels which are breaking the man of his own. The simple and natural life which has been lost by the human society could not be substituted by the cultural sublimation and eradication of fundamental instincts and passions. A deep void and perplexity full of struggle is the tragic tale of modern man. He is passing through various internal and external stresses due to which his mind is afflicted and full of anguish. The practical acquisition of Yoga is the attainment of tension free Citta. Yoga technique being based on wisdom oriented restraint and contentment, uproots the desires and produces calmness in the mind.

According to Freud, libido is the main force at the root of impulses, passions and their consequences which in a way is a desire for a spouse and in its common form is a will to possess. Fatherly or motherly love, devotion for Lord, materialistic fascination, anger, envy, emulation, repulsion etc., all the feelings and impulses are expressions of this power. Hunger, thirst, lust etc., the fundamental instincts when growing in the form of desires gradually become hard-knots and are called passions. These passions colour all the actions of the individual in their own colour and through them the Kama is expressed as well as enhanced. Passions expect their own fulfilment and in this effort and their context, the generated pro- and against emotions also desire their expression. But due to contrary external positions and non-acceptance by ethical ego, which does not recognize them, does not allow them to be fully expressed. Thus the struggle of these two elements

generates tension. These passions and emotional currents in want of their fulfilments and expression due to obstructions become part of the subconscious mind. There, these suppressed passions do not get extinct and wait in disguise for their expressions. They express in the form of "undesired terpidation", anxiety, day dreaming, mistakes in common behaviour and forgetfulness etc., and breed many physical ailments and mental deformities to create a further long chaotic tradition.

Yoga having analysed the human behaviours, searches out the inherent catalytic element i.e., Kama element in it, to which it calls attachment. The research of Yoga transcends the research of psychology when the former accepts Avidya as a more subtle element, the root instigator of behaviour. This Avidya is the inclination of mind to search for the self in the objects other than the self. It is that false vision which according to Patanjali and Jaina Yoga is negation of the realization of the self which is eternal and free. According to Buddha Yoga, this avidya insists to accept its own existence. Yoga considers this prejudice as the originator of Kama or attachment which usurps other's material. Thus Yoga to some extent gives concurrence to Freud and to some extent it is in disagreement with him. Yoga also searches the opposite element of Avidya, i.e., Viveka khyati on in other words, the power of the self which is the seer. It is considered the power of Atman in Jaina Yoga, of Purusha in Patanjali Yoga and of Citta in Buddha Yoga. Thus all these accept this power in one voice. This very power differentiates from motivation.

In psychology, mind analysis is that catharsis process which, while bringing the unconscious knot, emotions and feelings of the mind to the conscious land, eliminates the tensions created there of previously, after hypnotising the patient, through instructions his

suppressed unknown emotions were known but Freud invented the “free companionship system” in the form of mind analysis in which the patient, after having laid in the free posture *Sukhasana*, is allowed to speak whatever comes in his mind. He is inspired to expose not only his story but also all the images and memories occurring in his mind. In this way, the suppressed desires erupt and feelings are catharsised.

According to Yoga system also this process of catharsis can be implemented in two ways. So long as the suppressed passions are concerned, through *Savasana* (Dead Man’s Pose), the unconscious *Samaskaras* are allowed to protrude fully. Then they are made known through the powers of the mind which could further be catherised. The subtle seeds of this process of catharsis are found in *Pratyahara* of Patanjali Yoga, *Kayanupasyana* and *Cittaupsayana* practises of Budistic Yoga, and *Udirama* process done through *Tapas* and meditation in Jaina Yoga.

In Yoga, the purgation protruding emotions can be catharsised without suppression. In the moments of their protrusion without resisting their emergence on the mental level in the light of the unprejudiced power of the seer or by enlightening through the discriminatory wisdom, they can be purgated. In this process, the *Cittasakti* which by becoming ideational through the emotions could flow outwardly is made internal-oriented. In psychology when protruding emotions are controlled or obstructed by self-imposed ethical powers or the discriminatory wisdom hen the repression takes place, whereas in Yoga, the seer’s spiritual discriminatory wisdom which transcends even ethical ego procreates restraint and thus the emotions are purgated.

In this purgatory process, other parts of Yoga may also prove to be important. Since the emotions have both the

physical as well as mental dimensions, the Pranayama and Asana may be helpful for their catharsis to some extent. The balanced body and tranquilled respiration attained through Asana and Pranayama can help cleansing the material aspect. The Yoga might agree with this principle of James Lang that "the knowledge of a stimulus creates a few changes in the body and the feeling of those changes in emotion". Ordinarily we say that we have lost our wealth and we weep. We meet a bear, we are panicky and take to our heels. A rival insults us, we are angry and we beat him. But according to this theory, this sequence is faulty because more intellectual statement would be that because we weep we undergo anguish. We beat hence we become angry. We tremble and become afraid of. But Yoga contrary to the above alluded principle of James Lang does not explain the emotions as merely physical changes because in its *Yogic* view, the complete catharsis of emotions requires development and consciousness of citta-sakti which in its supreme nature is free from attachment and detachment. The *vivekakhyati* of Patanjali Yoga, *Vipasyana* and alertness (*Sajagata*) of Buddhist Yoga and *Janai pasai* practices of Jaina Yoga, throw, ample light on this fact alluded to above. It does not mean that Yoga excludes the fulfilment of genuine passions because Yoga accepts the fulfilment of biological needs and this fact is delineated in Patanjali Yoga by distinguishing between *Yama* and *Mahavrata* and by accepting them as the constituents of Yoga. Likewise this fact is further cleared by the *Anuvratas* of Jain Yoga and life style of Buddhist adherent. Indeed, the spiritual sight which is the backbone of Indian Yoga, is not the repudiation of biological values but it is the establishment of spiritual values above biological values as is clear from the word *adhyatma* (adi = aton) itself. The practice of yoga is not based on suppression, it is that practice of attachment

based on wisdom which further educates and purifies the internal dimension of human personality.

Body Context

Yoga does not educate only inner aspect of personality but it undertakes the education of outer dimensions also. Not only Asanas but Pranayama, Prayahara and Dhyana play an important role in maintaining the physical health. Through Asanas, the fat body becomes flexible, internal organs are massaged, blood circulation is regulated and the nerves are balanced. Through regular practice of Asanas the secretion of thyroid, parathyroid and indoenine glands etc., are regulated and balanced, thus most of the common diseases like asthma, diabetes, high blood pressure, mental ailments, heart ailments and abdominal disorders can be cured.

Pranayama and Health

Every part of the body is regulated by the energy supplied by mind and the arteries emerging from spinal cord. The power of the desired flow of this energy depends upon the secretion of inoaraine glands and this energy is cultivated through blood made available to the glands by the nervous system. The best blood is produced by the life promoting oxygen and nutritional elements which cherish and nourish the body parts. Oxygen through inhalation and nutritional elements are received from the blood but for this, all respiratory organs, digestive system and circulatory system are required to be efficient so that continuously produced carbon dioxide may be purified and pure blood may remain unaffected from the poisonous gases produced by the undigested food. In pranayama, through puruka racaka etc. the exercise of stomach and its muscles, liver intestines and lungs is undertaken so that they all may become stronger. Through Pranayama the organs get

attuned in such a way that a human being digests a lot more oxygen than his ordinary capacity in a day. Pranayama makes circulatory system regular and thus with the help of a pure blood circulation even the unconscious part of the mind also becomes active.

Meditation and Health

The meditation influences the thyroid gland, it normalises the oxidising power of body and helps balancing the excessive stimulation produced by the secretion of thyroid hormones. Likewise lethargy, mental inertia produced by the clauminated. Secretion of thyroid hormones are eliminated. As made known by "Electron safelogram" experiments, the meditation dispels away the tensions. During the process of Dhyana, the activity of the alpha waves is enhanced and a deep rest is attained. Hence one can save oneself from the badly effected respiration due to mental tension. Similarly, the energy likely to be wasted in anxiety and thinking process may be saved.

Yoga in Social Context

So far as the practical system put forth by Yoga is concerned, it impresses upon discarding violence and corruption which are the polluters of social life. Five Vratas of Jaina Yoga and Patanjali Yoga, comprising *Ahimsa, Satya, Asteya, Brahmacharya* and *Aprigraha* and *Pancasila* of Buddhist Yoga in which besides first four Vratas, abstinence is also included; can be fully vindicated in the social context only. Violence is intentional persecution whereas *Ahimsa* is its avoidance. *Ahimsa* is not the repudiation of "otherness" but it is the sacrifice of that persecution which can be held valid in the presence of the other. Likewise truth being avoidance of deceit through gullible words is execution of altruism through valid and secret words. It also cannot vindicate itself without social context.

Asetya in the form of avoidance of others possession and Aprigraha in the form of non-amassing of the riches creates a social balance from economic point of view. Out of these, the former indicates about the wrongs of consumption without producing anything and the latter declares the hoarding, exploitation and artificiality created scarcity to create imbalance in the social life is improper. Thus, these principles educate us to "produce more and accumulate less" or "Maximum production and minimum profit". This theory of Yoga rectifies the shortcomings of the modern and most dominating theories of capitalism and socialism.

Maitri, Karuna, Mriduta and Upeksha which have been accepted with one voice by Jaina, Buddha and Patanjali Yoga can be implemented only in the social context and these feelings gradually soften the behaviour towards commonly hard, hit people, progressive individuals and the enemies.

Since all the three Yoga traditions stress upon the elimination of attachment and desires, one question in this context may arise whether attachment is connected with social relations. Indeed, neither by breaking the relations attachment is finished, nor by being attached, the relations are severed, social relations based on attachment cannot escape struggle and envy, rather they without these cannot stand of their aim because attachment circumambulating and individual, religion, community or nation, invariably gives birth to the concept of other religion, other community and other nation. This concept again in their own contexts creates schism in the name of nepotism, casteism and narrow nationalism. Though it is difficult to repudiate attachment totally even then without sacrificing to a certain limit, the desired social life is not possible. The detached attitude alone can produce harmonious temperament which can make social anomalies not-existent and through which sociability can spontaneously flower.

Philosophical and Metaphysical Context

Science is a study based on inspection and tests of various limited aspects of reality and philosophy is intellectual study rooted on the conceptual analysis of the reality and the truth. Dharma and its specific practical aspect Yoga is an effort for spiritual relationship or visualization of that truth which is in the form of highest value or ideal. This effort is comprised for that specific realization and behaviours in which not only cognitive aspect of personality but the effective and cognitive aspects are also suitably educated and through total purification of personality, the spiritual value and ideals are attained.

If the philosophy is intellectual investigation, the dharma and Yoga are particularized experience. In philosophy, the logical faculty is desired but in dharma and Yoga, devotional wisdom and purity of internal realization are the assets of the adherent. In philosophy, cognitive element reign supreme but in dharma and Yoga alongwith cognitive element, affective and conative elements are also primarily needed. However, it does not mean that dharma, Yoga and philosophy are poles apart because in dharma and Yoga that effort of wisdom for reaching the truth is inherent which evolves into the spiritual experience and not that devotion which negates the intellect. Moreover, the Indian philosophy is not only conceptual and linguistic analysis, it is rather that system of thought which is formulated by logical thinking attained through intuitive experience. Thus, the philosophy and religion being cooperators are not hostile to each other. Dharma or Yoga is the practical expression and attestation of philosophical theories, whereas philosophy tends to explain religious and spiritual experience on the one hand, and on the other puts forth the theoretical justification of the same experience. Here one point needs clarification that if the logicality of the truth realized through spiritual

experience and the sense experience is accepted even then obviously, without inner sight and intuitive knowledge the sense-data oriented experience culminating into materialism is not acceptable either as philosophy or commonly cherished religion in India.

Intuitive experience may be explained coherently and logically proved by intellect but that experience which transcends cannot be produced by it. Though not as a producing power but as a controlling and consolidating power of experiences and beliefs attained from intuition, the intellect is purposeful, but so long as the supreme Reality is concerned, the intellect proves to be irrelevant because the system of induction and deduction through which the intellect operates prove to be useless there. In the process of deducing of high state of truth from the higher truth through deductive method, we without attaining knowledge reach the same place from where we had started because in this process, the conclusion remains hidden in the main premise whose authenticity is yet to be proved. Likewise in the inductive method, in which finding a common link in the given facts and then reaching a conclusion, we cannot go beyond the concepts and reach the truth which transcends the concepts. Hence, the inordinate need of a different source.

In this context, it is also necessary to consider the distinction between knowledge and science observed in the Indian philosophy. The first is knowing about the soul etc., with and through the help of a teacher, scripture and logic, whereas the second is the self-realization of the material. The lines *Atman vare drus tavya srotavya mantavyo niddhiyasti vyo* (Brh. Up., 2.4.5 and 4.5.6) and *Tan pasyate nispalan dhyoyaman* (Mud. 3.1.8) clearly reflect the importance of the situation, spiritual realization and the Yogic process conducive to the creation of internal conditions comfortable to their manifestation. Leaving carvak and Mimansa apart, most

cases of Indian philosophers, the Yogic cognizances which like secular perception is not bound in the limit of space and time, has been accepted. *Samadhi visesabhyat* (Nyaya Sutra 4.2.36) means that the *Samadhi* produce the metaphysical knowledge; as *Mahitatant karam upasanhrtsa madhiyasatesan* (Vaise Sinha Sutra 9.1.12.14) means that the liberated Yogis having attained Samadhi visualise even unperceivable matters. By concentrating on the celestial light, the Yogic comes to know about remote as well as immediate matters. Out of the five types of knowledge i.e., *Mati, Sruti, Avadhi Mamah prayays* and *Keval*, the last three are direct knowledges. Thus all the philosophies alluded to above support the Yogic power which brings forth the metaphysical knowledge.

In the context of the Yogic cognizance while opposing the Buddhists, the Mimansas is the concentration upon a particular thing. In this, no thought-fluctuation remains except the concentration upon a particular object and in a continuity of thought process for that object persists. Hence, the so-called Yogic perception which is produced in the fulfilment of the sentiments is just nothing but sheer memory. Since in obstructed concentration, the memory remains crystal clear, the same is misconceived as the direct cognizance. That is why Yogic cognizance is pre-eminently illusion and worldly experience and not the transcendental or supreme truth. According to Buddhists, the feeling (*bhavana*) works on two bases: the first being the direct meaning and the second indirect. The former is the real meaning obtained through the direct proofs and sources, e.g., the four noble truths but the latter is a sheer imaginative meaning. Having once fixed the real meaning with the help of logic, the same meaning is felt time and again. In this process, the veil between the word and its meaning gradually diminishes and in the last, the matter unveiled stands revealed. This is the Yogic knowledge. Here one thing is to be noted that Buddhists

do not call this seedless or directly revealed knowledge as the Yogic knowledge, they rather call that knowledge as Yogic perception which is re-created knowledge through the power of material feeling.

Here we come to an important problem, *Yogic Jnana* has been known as direct in Nyaya, Vaiseska, Patanjali Yoga, Jain and Buddhist philosophies. If this is direct, then why so wide deep and different opinions about the Yogic knowledge. Some attain dualistic, Prakriti-Purusa oriented and some monistic Brahman oriented knowledge. In this context, we may say that through Yoga, the feelings and not Supreme Reality is visualised. Being swayed by a particular feeling when we start the Yogic process, we ultimately visualise the same feeling in the shape of matters. According to the conception of an adherent on the basis of understanding of the listening to the prevalent thoughts of his sect, the Supreme Reality of the same form is visualised by him in the meditation. The reasons for different realizations have been counted by him as follows: (1) Anyone only has realized the Supreme while others merely boast. (2) Only one realizes the Supreme while others only reach near the lowest degree of the same. (3) One has attained the highest while others have obtained the lower steps. (4) All have realized the one reality through different sources. (5) Actually not realizing the reality, all mistake imaginary realization of their objects as the true realization. As in the first case, the judgement of the adherent and in the second and the third cases, high and low degree of realization is difficult to decide; likewise the fourth category may also not be accepted, because to accept the immutable in diverse forms is also impossible. Therefore, the fifth option remains acceptable, according to which the popular meaning of the Supreme realization is the self-realization.

At this juncture, a few clarifications are necessary. If we do not agree that through the Yoga, an objective

knowledge or new metaphysical knowledge is attained, even then we will have to agree that in this context, Yoga is competent to intensify, concretise, sharpen and delineate the knowledge attained through other sources and it can cultivate such an experience which is thought free and fixed and which can be explained variously in consonance with different involvements and viewpoints. For example, this experience, on account of his predominantly inhibiting attitude of the Buddha, has been explained by him as peace and restriction and according to him, all the dualities end there. On the other hand, due to his positive attitude, Sankara explains it as *Sat*, *Cit* and *Adnanda*. According to him, the consciousness there gets free from all dualities and is expressed in its own fullness.

The inordinate experience gained in *Samadhi*, on its being thoughtless and immitable, is invariably not secular but when efforts are made in order to explain it to solve the problems pertaining to practical life, e.g., mind and body relation, matter and consciousness relation, liberation, virtue, sin etc. Then in order to try to express the experience and putting forth the solutions of the problems due to individual feelings, likes and dislikes, and selection of the concepts and symbols, the difference of opinion comes on the surface. In this context, one is reminded of the fact that in the philosophical literature, for centuries onward from Buddha and Mahavira, the touchstone for every ism has remained the arrangement of bondage and liberation and doing and enjoying the fruits of Karma. The Buddhists believing in transitoriness put forward the logic in support of their view by saying that even if the Atman is regarded as immortal, no difference does it as well enjoying the Karma and its fruits. And the same logic was given by the Upanisadic Nityavadins to oppose Buddhism (*Samkara-Bhasya* 2.2.19). Jain philosophy also spoke against both of the views of eternality and transitoriness by expounding that neither eternal nor

transitory Atman can undergo liberation or the carmic cycle. But so long as the objective knowledge is concerned, this may be maintained that feelings are realized there.

Not only the metaphysical knowledge or self-realisation but to attain the Supreme ideal i.e., liberation from transmigration of cycle also, in Indian philosophy the importance of Yoga has been accepted and its seed lies in the stabilization of mind through Yoga and freedom from delusions and Karmas. Though according to Carvak, Atman has no spiritual existence, the death is the liberation, materialistic prosperity is the Supreme ideal which renders Yoga futile, but can the human being, having psychological, rational and ethical values, be defined only in the biological context? So long as the Mimansa philosophy is concerned, it can be said that while not accepting the Yogic realization in the context of spiritual realization, it still accepts the importance of Yoga as secondary means for attaining the life ideals of *Svaraga* etc., for the external rituals of Mimansa had the internal Yogic links also which were taught by the traditional gurus.

Except a few philosophies alluded to above, generally all the Indian philosophies accept the liberation from transmigrational cycle as the supreme goal of life and for its attainment, the emancipation from delusive actions has been accepted as a necessary pre-condition. But the base of such liberation and emancipation is Yoga which does not refer to suppression of any kind of mental propensity but to the sublimation of mind not to be tied again with mental propensities.

4

Asanas

The great Sage Patanjali has defined Asana “Sthiram Sukham Asanam” (That position which is comfortable and steady). Asanas are of three types, static, pseudo-dynamic and dynamic. Persons suffering from Heart Ailments should not do pseudo dynamic or dynamic Asanas. Only those Asanas are discussed in this chapter which are beneficial for Heart patients.

Pure physical exercises have only a physical effect on the muscles and bones, Yogasana aims at the harmonious development of body, mind and soul. Different Asanas have different effect on the organs of the body. In our body organisms, cells, tissues and glands play an important role. One diseased gland can affect the whole system. The main organs concerning digestive system, the stomach, small intestines pancreas, and liver are affected by the proper functioning of the abdominal muscles particularly of the diaphragm. Which is influenced by the breathing. Due to malfunctioning of the diaphragm and any organ of the digestive system, stomach acid is secreted improperly and indigestion, gas trouble are caused. The brain continues to receive messages irrespective of age. These messages store up both pleasant and unpleasant sensations. Yoga aims at expanding our total experience and awareness by re-educating us to receive and acknowledge all the messages that come in from the

body; whether they are painful or pleasurable. Blood circulation plays an important role in carrying food particles from digestive organs to tissues and the heart which is most important organ in the circulatory system. Asanas which are beneficial for the digestive system are also beneficial for the heart. The Asanas which tone up the abdominal organs and the diaphragm help to tone up the heart also.

Pranayam is extremely beneficial to lungs and the proper purification of the blood. With the regular practice of Asanas, any physical ailment can be nipped in the bud. Normally physical exercises seldom have any direct effect on the proper functioning of the endocrine glands but Asanas stimulate and tone up the endocrine glands. Yogasanas are not to be done at random or in accordance with one's whims or fancy. The heart patient has to undergo the process of selection and rejection. Every practitioner of Asanas must keep in mind some basic important instructions before starting Asanas. Asanas must be practised regularly and punctually with faith, determination and tenacity and without any noise, interruption and distraction. It is much convenient and hygienic to practise Asanas in the morning. First washing and cleaning your teeth and mouth, evacuating the bowels. Asanas should not be done with tight dresses or garments on the body. Spectacles, watch, rings, waist belts, brasiers, sandals, boots, should be removed while doing Asanas. Asanas should not be done after meals. Asanas may be practised in a quiet, calm, clean and a secluded place preferably in a garden with fresh air. In unfair and rainy whether the Asanas may be done in an airy room or verandah free from mosquitoes, flies, ants and bugs. The Asanas should be practised on a folded blanket or soft carpet or folded rug laid on the floor. During the practice of Asanas and Pranayama no strain or stress or jerk should be felt in the facial

muscles, ears and eyes. Except in the case of Simhasana and Vyagra asana, the eyes and mouth should remain closed during the practice of Asanas. The body should remain active and the mind watchful and free from any unholy thought, care and worry, while doing Asanas breathing should be done through nostrils and never through mouth.

Some ladies have often expressed the feelings that they look after their children, family, routine social and domestic works so they are not in need of Yogasanas. There is no doubt about it that our ladies do multifarious jobs in and outside the home. Cooking, washing clothes, grinding spices, attending office, maintaining all household affairs and interior decoration but even then some particular parts of their body do not get enough exercise which is essential. How can their internal organs be purified? How can they keep the main constituents of the body in proper trim? How can their physical ailments and disorders be prevented and cured? An artificial life, un-natural ways of living, faulty food habits, and idleness are the cause of many diseases. So it is essential for women also to practice some selected Asanas and the Pranayama. The aim of Asanas is to attain steadiness of body and mind, a feeling of lightness, health, suppleness, and psychophysical poise. For heart patients Yogasanas evoke feelings of sublimity, inner tranquility, psychic strength and purity of consciousness. The Asanas cannot be used as substitute for medical treatment. Success in Yoga is not obtained by mere theoretical study or reading the sacred texts. Constant practice alone is the secret of its success.

That heart is the most discussed organ of the human body. Hardly a day goes by without any announcement of new researches and new findings to beat heart disease. These medical advances fall in three broad categories : prevention, diagnostic and surgery. In all

the three areas there has been lot of progress. Regarding surgical heart cases, Yoga is silent. Following Asanas are highly beneficial for persons suffering from heart ailments and diseases.

1. Vajrasana : (The Thunder-bolt Pose)

Vajra means diamond. As the name suggests this Asana makes the body as graceful and strong as Diamond. It is the prayer pose of the Muslims and the Meditative pose of the Buddhists. This Asana can be done any time. This is the only Asana which can be done immediately after taking meals.



Fig. 4.1: Vajrasan

Technique

Sit on a folded blanket with the feet stretched backward. The knees should be kept together but heels apart. Lower the buttocks inside the feet . The heels should touch the sides of the hips. Place the hands on the knees and palms downward.

Benefits

This Asana is simple but beneficial. It brings tranquility to the mind. It also cures diseases such as nervousness, indigestion, and urinary diseases. It can also remove headache, acidity and weakness in the sexual organs and restore hope and self-confidence in man. This Asana is very beneficial for a person suffering from heart ailments.

2. Swastikaasana (The Auspicious Pose)

'Swastika' in Sanskrit means 'auspicious'. It is called Swastika because the crossing of the legs and hands (like the crossing lines) at right angle symbolise Swastika. This pose is also known as "Ankle lock Pose". This Asana was adopted by great Yogis like Vasiwa, Mateyendra, Bhargwa, Vishwamitra and Swami Vivekananda.

Technique

Sit on a folded blanket. Bend the right leg at the knee and keep the heel against the groin of the left thigh. Likewise bend the left and set it against the right groin. Insert the toe of the left foot between the right calf and the thigh muscles, keep the hands open on the knees. Palm in the air with the tips of the index finger touching the thumb.

Benefits

This Asana also increases the psychological energies, develops mental and physical stability, stimulates the nerves and muscles and cures piles, diabetes, disorders of the liver, spleen and gall-bladder. In this Asana one must do Pranayama exercises., Inhalation, Retention and Exhalation of breath. The period of retention of breath should be increased by seconds day by day.



Fig. 4.2: Swastekasan

Strength lies in the retention of breath. This Asana is also good for heart patients.

3. Simhasana (The Lion Pose)

This Asana is also very simple but rewarding and rejuvenating. In Sanskrit 'Simha' means a 'Lion'. Some modern Yogis think that this a fine Asana for Isometric contraction exercise. This is the only Asana in which breathing is done through mouth.

Technique

Sit on a folded blanket with legs stretched straight in front. Raise the seat, bend the right knee and place the right foot under right buttock. Similarly bend the left knee and place it under left buttock. Sit on the heals with toes towards backwards and put the weight of the body on the thighs and knees. Stretch the trunk backwards and keep the back erect. Place the right and left palms on the right and left knees. Open the mouth

and eyes wide and protrude the tongue out and down as far as you can. Remain in this posture for a couple of seconds. Breathe through the mouth.

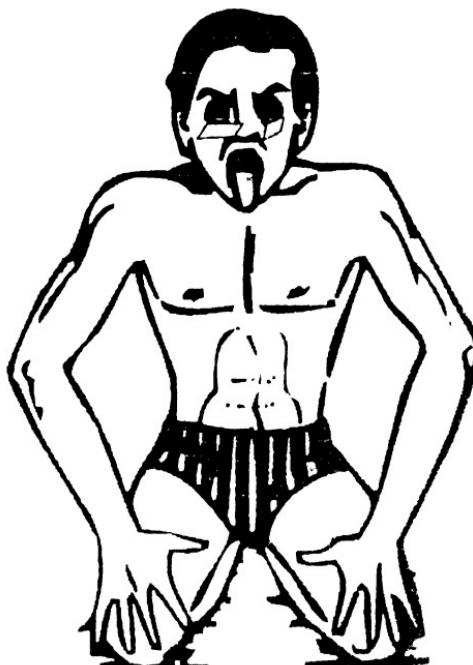


Fig. 4.3: Simhasan

Benefits

This Asana directs the flow of blood to the throat and larynx and tones up the muscles of the throat and face. It can also increase the glow of the face and eyes and remove constipation.

4. Nauka Asana (The Boat Pose)

This Asana is one of the simplest but highly beneficial Asanas. Energy in the form of prana (life force) is in every part of the body. It must have free flow. Sometimes due to certain impurities or chemical reactions, the free flow

is blocked resulting in stiffness, rheumatism and muscular tension.

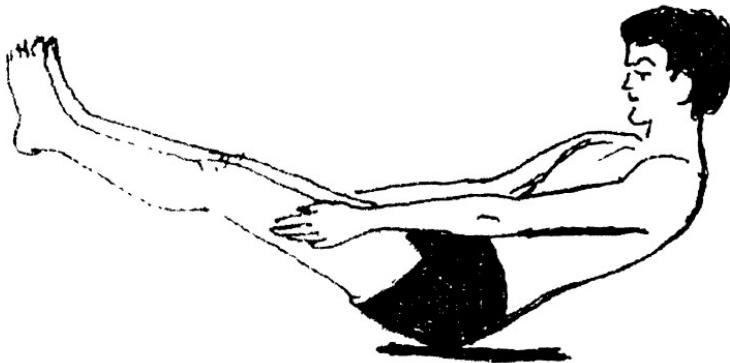


Fig. 4.4: Naukasana

Technique

Lie flat on the folded blanket facing the sky with hands clasped at the back. Raise your feet, head and the chest up as to form a curve on the floor with your body resting on the abdomen. In this pose the body looks like a boat. Breathe in when the body is raised. Retain breath for a couple of seconds and breath out when the body is brought down.

Benefits

This Asana eliminates gas from the abdomen, cures belching and high cough. It also cures the disorders of liver and gall-bladder; strengthens the intestines and colon. This Asana also improves digestion and sharpens appetite. This Asana also improves circulatory system.

5. Bhujangasana (The Cobra Pose)

Bhujanga in Sanskrit means 'a Cobra'. When the full and correct pose of this Asana is adopted, it resembles a

hooded Cobra. Heart patients suffering from peptic ulcers, hernia and Intestinal tuberculosis should not practice this Asana.

Technique

Lie flat on the stomach with legs straight and the feet extended. Place the hands, palms down under the shoulders slowly raise the body above the navel until the arms are straight but the stomach and the legs must touch the floor. Bend the head, back, gazing upwards. Remain in this pose for a couple of seconds. When you raise your head breathe in, when you are gazing upwards. Retain your breath for a couple of second. When you put your head and chest down breathe out and relax.

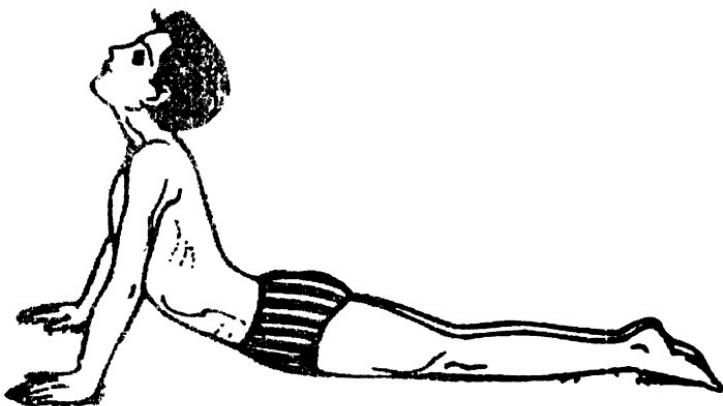


Fig. 4.5: Bhujangasan

Benefits

Bhujangasana is one of the highly efficacious Asanas for the spine and abdomen. It removes unwanted flesh from the hips and abdominal region, makes the spine supple and flexible, tones up the nervous system, liver and Kidneys. This Asana also strengthens the advernal glands. It corrects menopause and restores equanimity.

6. Jyestikasana (The Best Pose)

It is very simple but soothing and refreshing Asana for heart patients. It is more or less the same as Adva Asana with slight variation. This Asana can be performed by anyone. This Asana becomes effective when breathing is controlled and concentration applied. In this Asana one should have slow, rhythmic and longer breaths. Retain breath for a couple of seconds and then exhale breath.

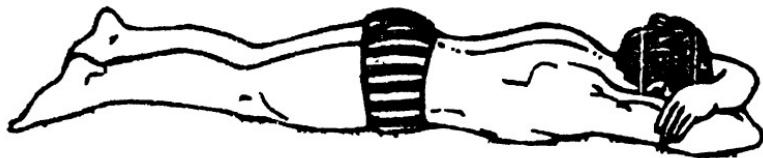


Fig. 4.6: Jyestikasan

Technique

Lie down on a folded blanket with face downwards. Interlock the fingers and place the palms at the back of the head. Breathe slowly, rhythmically, retain breath for a couple of seconds and exhale breath. Relax the whole body.

Benefits

This Asana improves circulatory system; makes blood pressure normal and removes mental and physical fatigue. It also sharpens appetite and tones up nervous system.

7. Shav Asana (The Corpse Pose)

This is most important, popular and highly beneficial Asana. For heart patients this Asana is a must. They should take it as necessary medicine. In classic texts "Hatha Yoga pradipka" this pose is called Shavasana and

in "Gheranda Samhita" it is named as Mrtyasana. Both Shav and Mritya means corpse or dead body. This Asana is called 'Total Relaxation Pose' by some Western Yogis. This Asana must be performed last of all. This Asana appears to be very simple but the technique of this Asana is not so simple. Our body is like a factory with many machines inside. Just as machines need rest, cleaning and repairing. Similarly the machines of our body also need cooling rest and repair. Today when the stress and strain of life are increasing rapidly, Shavasana is the only Asana that provides right relaxation to our psychophysiological system.

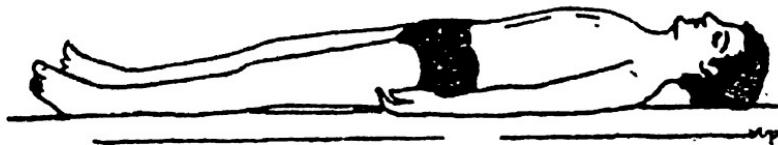


Fig. 4.7: Shavasan

Technique

On a folded blanket or folded rug lie down full length on back with arms away from the body and palms facing upwards, feet slightly apart, close the eyes and mouth and withdraw the consciousness by stages beginning with the feet, the ankles, the knees, the abdomen, the chest, the neck and the face and keep the mind free. Start breathing deeply, slowly and rhythmically. Retain breath for a couple of seconds and exhale breath slowly. Deep and longer breaths are absolutely necessary for concentration which gives complete relaxation.

Benefits

Shavasana is a very popular, powerful Asana for complete physical, mental and spiritual relaxation and refreshment. Longer and rhythmic breaths in Shavasana are highly beneficial for the body and mind. This Asana removes mental and physical fatigueness. This Asana also removes all mental tension, stress and strain and tones up the entire nervous system. This Asana also eliminates toxins accumulated in the body, recharges organism with prana restores energy and cures high blood pressure, heart ailments, insomnia, nervous disorders and depression. One can relax the mind by keeping the body motionless and then attempting to drive away all thoughts from one's mind. When one relaxes completely, one automatically counteracts stresses and strains with the result that high blood pressure gets reduced. In some western countries, Yoga is projected as Asana and Pranayama, Yoga is a complete subjective science. It is a mode of living, a way of thinking. Purity of mind, Yogic diet, Yogasanas, Pranayama, righteous actions are some of the important pre-requisites of Yoga. It has been established that with the help of yoga in totality, many mental and physical ailments can be prevented and cured. Dr. Dean Annis of California University did research work on Yoga and Heart Diseases in 1990. In his report he has used the word specific thinking in place of Yoga. In his research on heart patients he has proved that for decreasing Cholesterols in blood and for removing blockage in heart veins, yoga Sadhana is a scientific technique. Dr. Annis had included 48 heart patients in his research work. He had divided these patients in two sections. One section of the patients was given Yogic diet (Sattvic diet) Yogasanas, Pranayama Exercises and they were shown how they could keep their minds tension-free with the help of Dhyana and Samadhi. It was found that the blood

cholesterols of these patients had decreased to normal level. In this field further research was done by the cardiology department of all India institute of medical sciences, New Delhi, Dr. S.C. Manchanda of AIIMS established that Yogasadhna, a Scientific technique is very effective in preventing and curing heart diseases. According to him by adopting Yoga technique and by taking yogic diet the blood cholesterols of patients can be decreased by 20 percent. While in U.S.A. with the help of medicines only 7 percent of the cholesterols can be decreased. Besides other keeping one's mind tension-free. This Asana is not as simple as it appears to be. Generally people think that by lying down and keeping one's mind relaxed is Shavasana. But the technique of this Asana is not so simple. One has to be very careful about concentration and breath control. One has to take long, slow and rhythmic breaths, retain breath for a couple of seconds and then exhale breath. This Exercise of inhalation retention and Exhalation of breath is to be repeated at least ten times and then the eye-balls are to be rotated. Mind is to be kept free from any tension worry and anxiety. This Asana gives complete relaxation of mind and body.

Then heart patients should remain more careful about diet, fats, ghee, butter yellow part of egg, fried and roasted things, meat smoking, alcohol are to be avoided. For heart patients Isbagol (Sailan Husk) can be very useful. Generally people take Isbagol for removing constipation but it has been researched that by taking 15 gm. of Isbagol daily for one month 15% of Cholesterol can be decreased in blood.

Sometimes a person having any heart problem feels bewildered, confused and depressed because different people give him different suggestions. He also feels more depressed because of Economic conditions he cannot undergo by-pass surgery which is costly. Today,

Hypertension is a major problem both in developed and developing countries. There are numerous data where it has been established that incidence of hypertension both in rural and urban areas is significant and it is a prime risk factor in initiation of Coronary artery disease, heart failure, strokes and kidney failure. In most population, blood pressure rises with age in both men and women. Systolic pressure rises throughout life while Diastolic pressure tends to play to around 6th decade. At younger ages, the blood pressure in female is lower than males. But after menopause the rate of rise of systolic pressure with age is greater in women than in men. Hypertension may be defined as the blood pressure above which treatment does more good than harm. In 1997, report of the 6th joint National Committee on "Detection, Evaluation and treatment of high blood pressure" include both Systolic and diastolic levels in the classification of blood pressure. The most important thing is the true measurement of blood pressure considering many aspects of its variability, clinical importance of white coat effect. Nocturnal dipping and early morning upsurge in pressures. There are three main options for the treatment of hypertension. The first is no treatment of hypertension., or at least delayed treatment. The second is treatment but without using drug and the third is drug option. The decision to adopt any one of these options depends on the balance between the benefit and risk. With hypertension the balance between benefit and risk varies with age, level of blood pressure and probably to lesser extent on the actual drug treatment employed. A person who is mentally satisfied in all aspects of life including family will be better able to control hypertension. One has to have active and regular mental relaxation either by transcendental meditation, Yoga or Vipasana.

Yoga by virtue of its concept and philosophy relieves stress. Under conditions of stress adrenaline is released from adrenal medulla into the circulation where by it increases the rate and force of cardiac contraction, thus there is a strong theoretical support offer the role of stress, treats hypertension and many problems connected with hypertension.

There was a time when only the affluent used to get heart attacks and were prone to high blood pressure but that has been reversed. Now even those whose socio-economic condition is not so high are victims of heart attacks because of smoking obesity, high blood pressure or high cholesterol lack of exercise and mental tension. It has been established by renowned cardiologists that Yoga is beneficial when combined with modern medicine to provide holistic treatment, changes are going on in our environment all the time and our body and mind keep on adjusting to these changes. Stress is a response to these changes. If the demand is mild, most of us manage it very well. But the difficulty comes when we are faced with acute stress or with chronic stress. Among the common symptoms of stress are headaches, backache, pain in legs, a pain over the heart region, palpitation, stomach upset, acidity, excessive gas in stomach feeling of fear, apprehension, tiredness, lack of energy , sadness, poor sleep, and loss of interest in sex. Recent medical research has established that chronic stress leads to the lowering of the body's immunological processes which are its main defence, Mechanisus. This results in increasing chances of getting repeated infections, allergies and heart diseases.

Health, as defined in the WHO's Constitution is a state of complete physical social and mental well-being and not merely the absence of disease or infirmity. Generally when people talk of health they usually refer to physical health only. In Sanskrit "Swastha" means as "One is

collected in self, calm, composed, healthy at ease" If one has lost one's mental health---the capacity to work, to love, to enjoy, to think positively-----all the material things one has acquired are worth nothing. We normally give no importance to mental health. If one has a mental illness like depression or anxiety we avoid his company. So for heart patients it is essential to adopt Yoga in totality (all aspects of yoga) and not Asana alone. Heart patients need not feel depressed or tense, they can prevent and cure the disease by Yogasadhna.

5

Pranayama

Of all the functions of the body, breathing is most important. To breathe is to live and to be alive is to breathe. Yogis measure life not in terms of number of years but the number of breaths taken. Modern civilised man does not know how to breathe. Our unnatural living conditions in modern city, stuffy and suffocating apartments, cramped working conditions in factories and offices, our faulty and wrong methods of walking standing and sitting have robbed us of the rhythm of life and correct breathing. The result is that millions of men and women young and old are seen with Sunken chests, narrow shoulders, and victims of Asthma, Bronchitis, and heart-ailments.

Prana which is fundamental energy stimulates mental and physical forces not only in human beings but in all forms of life, may be small flower or a huge tree, an insect, a bird or a big animal. Prana is the basis of all types of life, physical, spiritual intellectual, higher or lower.

Prana is altogether different from breathing. It is inside the blood and the bones. Life may continue without one or the other organ, but since Prana is the pivotal force, all the functions of the body depend on it. Without prana-breath of life, body dies and decays. The great authorities on Yoga assert that "prana" has three stages of

relationship *viz.*, mind, soul and supreme soul. Through Pranayama one can learn the secret of universal Prana. Prana can be felt in the palpitation of the heart, its systolic and diastolic actions, in the actions of exhalation, inhalation and retention during the course of breathing, in the digestion of food, the manufacture of semen, gastric guices, bile, intestinal guices, and other actions like walking, thinking etc. Thus prana is the vital link between the astral and physical body. As soon as this link is snapped, death occurs. Mukhya prana which assumes five forms, lives in the heart of a person. The five forms have different abodes i.e., Prana lives in the heart, Apana remains in the Anus, Samana has its seat in the region of the naval, Udan's abode is the throat whereas Vyana, the all pervading moves all over the body.

Respiration and breathing are not synonymous to each other. Breathing stands for the mechanical act of inhaling air into and exhaling it out of the body. The moment, a body sees the light of the day it starts breathing. Respiration on the other hand is a life giving process which continues ceaselessly from Womb to Tomb. Prana is the force behind and within breath. Prana is the force magnetism and electricity.

Pranayama is a combination of two words-Prana and Ayama. Prana means breath and Ayama means pause. Thus pranayama stands for rhythmical breathing exercises by which lung motions and mental functions are regulated. Prana is the cause of nerve currents that make the different organs of the body work. On it depends the various functions of mind such as thoughts, feelings and desire. It is believed that muldhara Chakra is the seat of Prana. For doing Pranayama one should have purity of thoughts words and deeds. Mind should be free from avaricious thoughts, greed lust, jealousy, egoism

and unrighteous desires for they disturb the serenity of mind. There should be strict control over one's diet, conduct, sexual habits and maintenance of regularity in Yogasanas. Pranayama is a physical and mental Exercise, a purifier of body. Mind and Nadis and a healer of diseases. The lower type of Pranayama goes a long way in healing physical and mental ailments whereas the higher type of Pranayama leads to spiritual heights. In the same way breathing high, the upper part of the chest moves the lungs but the air inhaled is minimum. The middle way breathing which common people have is always good. In the low breathing, the movement of the diaphragm makes the air rush to fill the lower and the middle parts of the lungs. In Pranayama, the maximum quantity of oxygen is inhaled kept and absorbed in the system and carbon dioxide is fully exhaled from the lungs. Thus Pranayama is a scientific, mental and physical exercise, particularly of the diaphragm, the abdominal muscles, the heart, liver, the nervous and endocrine systems, spinal cord etc. The circulation of blood is normalised the three stages of Pranayama are Puraka (inhalation), Kumbhaka (Retention) and Rechka (Exhalation).

Rhythm is life and change is the law of Nature. Everything is in a state of Vibration. The atoms of the human body are in constant vibration and rhythms is to be found in all vibration. The rise and fall of the sea, the swing of planets around the sun, the ebb and flow of the tide, the beating of the heart-----The law of rhythm is applicable to all. Following Pranayama exercises, If performed regularly and correctly will be extremely beneficial to persons suffering from heart ailments.

Exercise No. 1

Choose a lovely, neat and clean place. Sit in Sukhasana posture. The spine should be kept erect. Close

the right nostril with right thumb and slowly inhale with the left nostril. Then retain breath for a couple of seconds and exhale through the same nostrill. Do this at least five times.

Exercise No. 2

Sitting in the same posture, close the left nostril with left thumb and slowly inhale with the right nostril. Retain breath for a couple of seconds and exhale through the same nostril. Do this at least five times.

Exercise No. 3

In the same sitting posture, inhale through both the nostril as much air as you can with ease and Comfort. Retain breath for a couple of seconds and exhale breath through both the nostrils.

Exercise No. 4

Sitting in Sukhasana or Sidhasana posture, fold the tongue in such a manner that the tip of the tongue touches the upper palate, draw the air through the mouth producing a sound of "See, See" Retain breath as long as you can Conveniently and exhale through both the nostrils. This Pranayama exercise cures many diseases of the blood.

Exercise No. 5

Sitting in Sukhasana or Sidhasana Contract the lips and throw out the tongue. Fold the tongue like a tube and draw in the air through it making a hissing sound. Fill the lungs and stomach slowly with the air drawn in and retain the same as long as you can comfortably and exhale breath. Do this exercise at least 10 times daily.

Exercise No. 6

Sitting in Sukhasana or Sidhasana, with body, head and neck erect. Close the mouth inhale and exhale quickly 8 to 12 times in rapid succession like the bellows of the village smith. While practising this Pranayama a hissing sound is heard. Then retain breath for a couple of seconds and exhale breath slowly and comfortably.

6

Balanced Diet and Yogic Diet

All forms of life, whether plant or animal, need, certain basic elements to grow and to live. These basic food elements must be present in the diet in adequate proportion and must be taken regularly. A human body consists of millions of living cells having different functions. Each cell needs proper care and nourishment. To ensure this we must select proper diet. Much depends upon the basic knowledge or the proper selection of diet which is source of vitality. We live by taking our food. Errors in diet can give birth to many ailments and diseases. Human bodies have the power to fight diseases and illness, and replace worn-out tissues with new cells. But they need proper care and right kind of food otherwise the body will soon grow old and die.

Our body is like a wonderful house and we are builders. We build this house daily selecting materials for the building process going on within ourselves. This construction work continues from cradle to grave. For a strong body or strong house, we must have right material. The body building materials, as suggested by doctors are proteins, fats, carbohydrates, vitamins, minerals and water. These materials we must have in sufficient quantity at the proper time. It is only from our food that we can get the materials for building bones, muscles, nerves and skin. Although certain cells such as those

of the bones, muscles, thyroid gland and red blood corpuscles need more of certain food elements than do other cells, the sum of the needs of all these cells make up the nutritional needs of the body. The vital area of the athletic programmes that has remained neglected in our country is the nutrition of athletes. Nutritional standards effect the capacity and performance of athletes. Nutritional status, fluid, and electrolyte balance can influence immediate performance.

Proteins

The word protein is derived from a Greek word meaning "To come first". Protein is the most important part of every living organism. From the foods we eat, each cell, whether in bones, muscle, nerve, or skin builds up its own particular type of protoplasm. This is the living jelly-type material of which all cells are composed. This protoplasm is created from the protein within our diet. But the protoplasm also contains within itself the power of movement, reproduction and growth. It is from the proteins that the living protoplasm within the cells is built. This wonderful material is constantly absorbing and expanding energy. Part of this energy is needed for the growth of the cell itself. The rest is expanded on the work the cell does and the heat it produces. That is what keeps us warm and alive. These cells must have sufficient daily supply of protein and carbohydrates. Chemically, proteins differ from carbohydrates and fats in that proteins contain nitrogen in addition to the elements carbon, hydrogen and oxygen. Many also contain sulphur, phosphorus, iron and other minerals. Nitrogen compounds are essential for the building of body tissues and protein is the source of nitrogen, hence basic and important essential of diet. Proteins are complex molecules made up of nitrogenous compounds called "amino acids". These amino acids form the

building stones out of which all proteins are constructed. "Complete" proteins contain all the essential amino acids that are necessary to health. The best sources of complete proteins are meat, fish, soyabean, eggs, milk and cheese. To provide all the essential amino acid, it is advisable to have some complete proteins at each meal. In the process of digestion, proteins are broken down into the amino acids of which they are comprised. The amino acids are absorbed from the intestinal tract into the blood stream and carried by the blood to the tissue cells which are in need of them.

The protein requirements of the body depend upon the rate of growth. During childhood, pregnancy and lactation, slight increases are recommended to ensure proper supplies for growth. Soyabean, nature's great gift to man, is one of the richest sources of complete protein. Soyabean also contains a high quality vegetable oil that has no cholesterol in it. It also contains lecithin which help control the level of cholesterol within the body. Since soyabean is low in carbohydrates, diabetic patients can use them without any harm.

Carbohydrates

Carbohydrates which are found in our food mainly sugars and starches are combination of carbon, hydrogen and oxygen, with the hydrogen and oxygen always in the same proportion as in water, i.e., two parts hydrogen and one part oxygen. Carbohydrates can be absorbed into the blood stream and utilised by the tissue cells only as simple sugars namely dextrose or glucose. Cane sugar and beet sugar called "sucrose" are "double sugars". Starches contain multiple sugars bound together in loose chemical combination. The first stage in the breaking down of starches takes place in the mouth as the result of a ferment (ptyalin) contained in the saliva. After digestion, sugar is absorbed directly into

the blood from which tissue cells withdraw it according to their needs. Carbohydrates getting digested in the system, preserve body temperature and supply energy to the body in hard jobs and when sudden energy is required during running in fear etc. If due to any reason, the amount of sugar in the blood falls below normal, "hypoglycemia may cause weakness, nervousness and trembling, and sometimes may cause death. In the tissue cells, sugar is oxidised with the help of hormone insulin, consequently heat and energy are liberated. The muscles may contain both sugar and oxygen but without insulin normal oxidation will not occur. When the pancreas does not produce insulin in desired amounts, Diabetes mellitus may occur. There are primary and secondary sugar-producing foods. The primary sugar producing foods are sugar, honey molasses, raisins, dates, rice, wheat flour, sago, middlings, green gram, lentil, turmeric. In these starch or sugar producing elements is present from 50 to 90%. The secondary sugar-producing foods are potatoes, plantains, radish, beet, mangoes, onions, figs, coconuts, ground nuts, cardamon and cloves. These contain 30 to 50% sugar element in them. The need of the body for carbohydrates depends upon the amount of physical activity and the quantity of other energy foods available. For example, the carbohydrates intake of a labourer may be 50 to 100 percent higher than a teacher.

Fats

Most of the oily substances taken as food may be termed as fats i.e. ghee, butter, oil etc. Fats also are composed of the chemical elements-carbon, hydrogen and oxygen, but these exist in different proportions and combinations from those in carbohydrates. The primary fats are composed of fatty acids and glycerol. Saturated fatty acid is a term showing that the carbon atoms have all the hydrogen they can hold. The oils are made up

basically of unsaturated basic acids. In the process called hydrogenation, the unsaturated fatty acids take on hydrogen and become solid fats.

Like carbohydrates, the required quantity of fat depends upon energy requirements and the amount of other energy foods available. As an energy-producing food, fat is most valuable, for the oxidation of 1 gram of fat yields approximately 9 calories, while 1 gram of carbohydrate or 1 gram of protein yields 4 calories. Fats are derived from both animal and vegetable sources. The first grade fat foods are: ghee, butter, cooking oils, butts, pistachio, casein, cheese, soyabeans, wherein fat contents vary between 35 to 85 percent. The second grade fat foods are: meat, eggs, large fishes, different pulses. Fruits and vegetables contain very little fats.

Because of the relationship of fats cardio-vascular diseases particularly atherosclerosis, the fat contents of diet has become the subject of attention and research. It is said that Cholesterol, a fat-like substance, is deposited in the inner walls of the arteries. They may produce a rough spot in the lining of an artery upon which a blood clot may form. As it increases in size, this clot obstructs the flow of blood through the artery. Consequently it may cause coronary thrombosis or cerebral thrombosis. Cholesterol functions in the transportation of fats by the blood and is also an important constituent of brain cells and of adrenal hormones. Cholesterol therefore is important to the proper functioning of the body, but the excess of Cholesterol can be harmful. Cholesterol is also present in egg yolks.

Vitamins

For the growth and vibrant health, the role of vitamins cannot be underestimated. Vitamins are involved in the

nutrition of the body cells, taking part in many complex metabolic reactions in the tissues. Collectively as body regulators, they function in cell respiration, as components of enzymes and in the metabolism of other nutrients such as protein carbohydrates, fat and minerals. For every human body, vitamins are needed in small amounts. The vitamin deficiency can give birth to many ailments and diseases. Vitamin is not a food, although it is usually present in the foods we eat. Nor is it a "food supplement". Vitamins work in many ways and are often closely related to each other in their reactions within the body. Most vitamins do not occur alone. They are often found in pairs of groups, so that if one is absent, others may also be missing.

Fat Soluble Vitamins

Vitamin A: is called the "beauty vitamin". It is needed for maintaining a normal condition of the epithelial tissues. Deficiency of the vitamin is reflected in abnormal conditions of the eye, the skin, the upper parts of the respiratory passages, the bronchis. Vitamin A is essential for normal growth of bones and teeth particularly in children and young people. The Vitamin A deficiency can cause night blindness that is difficulty in seeing in dim illumination.

Vitamin A is found in fish liver-oils, liver, cream, Amaronth leaves, drumstick leaves, green leaves, spinach, betel leaves, cabbage, lettuce, carrot, ripe mangoes, tomatoes, oranges and banana. This vitamin is present more or less in other green vegetables and fruits also. Carnivorous animals gather it from green leaves, the birds from fruits and fish take it from different mosses. Carnivorous animals and flesh eating men gather it from the fat and liver of the killed animals. Vitamin A is also manufactured in the liver from the yellow colouring matter found in carrots, apricots,

cantaloupe, and other yellow foods and in all green foods such as collards, spinach, beet, turnip tops and mustard greens. The colouring pigment was first separated from carrots, and was given the name of carotene. Both vitamin A and carotene dissolve in fat. If a vitamin dissolves in fat, it can be stored in the body whereas vitamins that dissolve in water cannot be stored but must be obtained daily. The vegetables namely asparagus, carrots, green beans, pumpkin, sweet potato, tomato and water cress are excellent sources of carotene.

Vitamin D: This vitamin is called the "sunshine vitamin" because when the ultraviolet rays of the sun fall on the skin, vitamin D is formed. This vitamin is also called the "anti-Rachitic vitamin" because its absence from the diets of infants results in the disease known as "rickets". Although rickets is usually considered a disease of the bones, because of the skeletal deformities which accompany it, it usually is a nutritional disease which affects the entire organism. Vitamin D is needed in the development of strong, healthy bones. Its chief function is to maintain the right concentration of calcium and phosphorus within the body. This is required more for babies and children whose bones are developing rapidly.

Another children's disease which is associated with calcium metabolism and vitamin D is tetany. Restlessness and contraction of certain groups of muscles particularly those of neck, legs and lower back are the main symptoms of this disease. Other results of the deficiency of vitamin D are defects of the teeth. The richest known sources of Vitamin D are fish oils such as cod-liver oil and halibut-liver oil.

Other Fat-soluble Vitamins: Vitamin K and E are both fat-soluble vitamins. Vitamin K assists coagulation of blood and it is very much needed for the body of the

pregnant women, just before delivery and during the period of lactation. All green vegetables and micro-organism contain this vitamin. Tomatoes, mosses of the sea, soyabean, spinach, cabbage, cauliflower, strawberries are richest in Vitamin D. Vitamin E is useful in the building up of tissues. It forms an important part of semen in the body. Vitamin E is subject to some controversy. It is established that Vitamin E is essential for normal reproduction in many animal species, and some say that it is essential to men. It is believed that it acts as a regular of the metabolism of the 'heart' or nucleus of the cells. Wheat gern oil, oat meal, olive oil, corn, butter, carrots, eggs and lettuce contain Vitamin E.

Water-soluble Vitamins

Vitamin B (Thiamine): This vitamin is of great importance for the human body. It enters into almost every chemical reaction within the body. Without thiamine or vitamin B, the cells cannot utilise oxygen or fuel for energy, nor can the nervous system function properly. The absence of thiamine from the diet causes muscle pains, nervous irritability, digestive disturbances, weakness, anaemia and lack of appetite. People having these ailments and symptoms fall prey to Beriberi. They feel tingling sensations in the feet and legs. If not taken care of at the initial stage, the patient would suffer from a failing heart. Swelling would appear in the legs and the patient would feel difficulty in breathing. Another painful condition known as neuritis or inflammation of the nerves would develop. The early investigators and physicians discovered the substance which they called vitamin B were surprised to discover a whole family of these B vitamins-more than a dozen of these vitamins, all different and performing a wide variety of functions. Most of these B complex vitamins

work together for the benefit of the body. Whole-grain cereals, wheat germs, unpolished rice, fresh fruits, eggs, dried beans, and lentils are best source of vitamin B. Since vitamin B cannot be stored in the body, it must be taken everyday. Growing children, nursing mothers, and pregnant women need extra amounts of vitamin B.

Vitamin B2 (Riboflavin): This vitamin is important for cell respiration, growth and general well being of body, skin, eyes and mouth. It is related to the utilisation of protein. This deficiency is more common in under-developed and under-privileged areas of the world. Milk, eggs, peas, beans, pulses, yeast, green leafy vegetables are best sources of vitamin B2.

Niacin (Nicotin Acid) is important for the skin and central nervous system. The deficiency of Niacin can cause Pellagra—the skin becomes rough, scaly and dark and the patient suffers from a gradual loss of strength. He may also experience mental depression called "neurasthenia" burning sensation in mouth and throat. The patient complains of nervousness, dizziness and insomnia. The extremities become numb. As the disease advances, the patient experiences hallucination and delirium.

Vitamin B6 (Pyridoxine) bears close relation with other parts of the B complex. It is found in yeast, whole grains, dhals, pulses, egg yolk, and milk. The absence of Vitamin B6 from the diet may cause convulsions in children and extreme nervousness in adults. Vitamin B12 contributes in the production of red blood cells. The absence of vitamin B12 can cause anaemia, and the patient may feel pain, tingling and numbness in the extremities and there may be partial paralysis.

Vitamin C (Ascorbic acid): This vitamin is called the "great healer" of the body. It is particularly needed by those who are suffering from some severe infection or

prolonged illness. The absence of this vitamin in the diet can cause a disease known as scurvy. In this disease, bones become painful and tender. This vitamin is destroyed by heat and cooking. This vitamin cannot be stored in the body. So its daily intake is necessary. The best sources of vitamin C are the cirtus fruits which include orange, grape fruits, lemons, amlas, guava and tomato.

Vitamin P: It is complementary to vitamin C. It is soluble in water and its function is to keep the walls of the blood vessels strong and elastic. All sour fruits contain this vitamin. Its presence in the body in proper quantity prevents skin disease, baldness etc. It is found in all vegetables, fruits, eggs, liver and kidney of animals.

Minerals: Mineral salts do for the human body what sand and cement do for the construction of a building. Mineral salts are very important ingredients in making the structure of the body strong and preserve it. Calcium and phosphorus are needed for building strong bones and teeth. Other minerals act somewhat like, "sparking plugs" for certain important chemical reactions, and others form intricate combinations with proteins and are needed by the enzyme system of the body. The purpose and functions of all the minerals in the body are still vague and controversial. Some minerals are needed in large amounts while others are needed in small quantity. The traces of minerals considered to be essential are calcium, phosphorus, iron, iodine, copper, chlorine, cobalt, fluorine, magnesium, manganese, potassium, sodium, sulphur and zinc.

Calcium: Calcium or lime, the most abundant mineral in the body, is found in the bones, where it provides strength and stability to the whole system. A small amount of calcium is always carried in the blood stream

where it prevents serious haemorrhages. Calcium is also necessary for nerves and muscles and vital to health. When the calcium level in the body drops below the normal level, the nerves become irritable, and muscles go into spasm. Cramping pains may then be felt in various parts of the body. Calcium is more important for the muscles of the heart. When the calcium is reduced in the blood stream, the heart loses its power. Both calcium and phosphorus give strength and firmness to the body structure of the body. There is close relationship between calcium, phosphorus and Vitamin D. Deficiency of any of these may cause serious disturbances in the body. In children, the deficiency of calcium and phosphorus may cause rickets and in adults ostomalacia. The best sources of calcium are milk, green vegetables, peas, beans, soyabeans, eggs, lentils, potatoes and fish. All juicy fruits like lemons, oranges, mangoes, pine-apples, papan, grapes and pomegranates are rich in calcium. But among all such fruits, Emblic myroblan (Amla) excells all.

Phosphorus: It is another important mineral associated with the proper and healthy functioning of all body cells. It plays a vital role in many important chemical reactions. It bears close relation with important substances such as enzymes, proteins, and carbohydrates. Phosphorus is essential for all the muscles. Phosphorus also assists to maintain the normal acid-base balance of the body. It also helps in building sound, healthy teeth and strong bones. Phosphorus is present in all foods in varied proportions. This salt never falls short in the body unless affected by particular disease. It is present in whole-grain cereals and nuts and is particularly abundance in milk. Phosphorus is needed for patients who are recovering from some serious accident, illness, or surgical operation.

Iron: Another marvellous mineral is iron. Without this metal one cannot live for even a moment. Most of the iron is found in the red blood cells, where it forms part of that very complex protein known as haemoglobin. This is the red substance that gives colour to the blood. It carries the oxygen to the tissues and keeps us alive. Haemoglobin is indispensable for our very existence. Anaemia or dementia takes place when haemoglobin is not manufactured by a sick liver. Red blood cells are extremely small. Normally they are about 5,000,000 of them in a drop of blood. Each red cell contains 250,000,000 molecules 1000,000 atoms of iron. Some cells live for many years in the body but the red cells in the blood-vessels of the body last only for a few months and then are destroyed. New cells are produced to replace the old ones. It is a well known fact that iron rusts when it is exposed to the air and it rusts more rapidly when the air is damp. This chemical reaction is known as oxidation. A molecule of iron attaches itself to a molecule of oxygen from the air, forming iron oxide. The same process takes place when the red blood cells pass through the lungs. The air within the lungs is warm and damp, and the iron in the red cells rusts as it passes through the lungs.

All this happens in a giffy. From there the cells are carried by the blood stream to the heart, then pumped to all the distant parts of the body. In the tissues, reverse process takes place. Haemoglobin or pigment in the red cell rapidly gives up its load of oxygen and picks up a supply of carbon dioxide. The carbon dioxide-loaded cells are then carried back to the heart and pumped to the lungs, when they pick up fresh doses of oxygen. Thus, it can safely be said that iron is of paramount importance for the health and well-being of all the parts of the body. Moreover, we need more iron for better memory.

Iodine: Another mineral-salt whose role cannot be undermined is iodine. It helps in building up the cells, conducting the activity of the nerves and in preserving the vitality of the body. Iodine is a main food for the thyroid. This gland influences the pituitary gland. The deficiency of calcium and iodine can cause serious ailments in the body. Besides deficiency of iodine hampers our intellect and capacity for thinking. The deficiency in this salt in the married women below normal level results in sterility. Sometimes, dumb and dull children are born to parents suffering from deficiency in both iodine and calcium. Iodine is found in the green leafy vegetables. From the digestive tract, the iodine passes into the blood stream and is soon picked up by the thyroid. There, the iodine is changed into thyroxin, a powerful hormone that regulates the activities of various organs and controls the rate at which a person grows. The thyroid gland also controls the conditions of the skin. When a person has too little thyroid, his eyelids become puffy, face dull and apathetic, the hair coarse dry and brittle, the tongue swollen and speech hoarse. Sea foods and vegetables grown near the sea coast are good sources of iodine. Besides iodine is present in onions, pine-apples, green vegetables, eggs and cod-liver oil, Indians from time immemorial use ginger, pepper, cumin, cloves, as species in their cookery for taste and flavour. These species also contain some iodine. We need iodine for more stamina, greater endurance, healthy thyroid gland and keeping slim.

Copper: This mineral, in very small amount is essential for the utilisation of iron by the body, thereby it is also a contributory element to the healthy growth of all the parts of the body. Though it is not an ingredient of hemoglobin, but hemoglobin cannot be manufactured without this salt. Foods which contain iron are known to contain copper also.

Sodium and Potassium: These minerals are vital in preserving the body's water balance and assist in the functioning of nerves and muscles including the heart. Sodium occurs chiefly in the blood and other body fluids outside the cells while potassium is found mainly inside the cells. In some disease of the heart and kidneys, the amount of salt in the diet is restricted in order to reduce the collection of fluids in the body tissues. Vegetables, fruits, milk, all non-flesh food contain sodium in varied proportions.

There are "the trace minerals" which perform both major and minor roles. They are mostly aids and contributors. Flourides contribute to the development of caries-resistance teeth. This salt is great aid to calcium in maintaining the health of one eyes and in building up the teeth and bones. Spinach, beet, raw eggs, and cod-liver oil contain this salt. Similarly, silicon salt also works as an aid to calcium and this salt keeps the teeth strong and improves the complexion of the skin and colour of the hair. This salt is present in all juicy fruits and vegetables like cabbage, radish and cucumber. Sulphur salt prevents greying of hair. This salt helps in maintaining the glow of health and proper functioning of liver and spleen. This salt is present in onions, radish, cabbage, spinach, barley and unboiled eggs. Another salt known as Magnesium salt assists in the formation of teeth and bones and nerves. A number of elements though called "trace minerals" are of great importance to the health of animals and human beings. For example, when magnesium is not supplied in the diet of animals, they sicken and die. Their hearts and heart beats become abnormal. The blood of some people suffering from extreme irritability has been found to be low in magnesium. Another mineral i.e. zinc is necessary to the health of the animals and human beings. It is present in human tissues especially in the thyroid and

sex glands. Liver, green vegetables and milk are the best sources of zinc. Like zinc, cobalt is also found in small amounts in most of the organs of human body, and is a part of vitamin B12. It contributes to the development of red corpuscles. There are other minerals namely tin, silver, bromine, mercury and nickel found in human body-tissues, liver, brain, thyroid gland, pancreas, sex glands, heart, spleen and kidney. But the functions of these minerals are not well established.

After minerals, the importance of water is of great value. Water, the elixir of life, the liquid of life, works as a preserving, and lubricating agent. Water enters into every reaction within human body. More than two-third of our body is composed of water in some form or the other. Everyday our kidneys filter between 10 to 15 gallons of water for us. The person who does not drink sufficient water required daily, may soon develop some ailments like constipation and other digestive disorders. Stones may form in the kidney or bladder. Lack of water may slow circulation and thicken the blood stream, thus laying extra load on the heart. To drink boiled water is a basic preventive measure. Sometimes water which looks pure may be full of *germs*. One of the best chemical for purifying water is calcium hypochlorite.

After discussing the nutritional requirements of the body, we come to the proper selection of foods proteins, carbohydrates, vitamins, mineral salts, no doubt, are essential for good health but the question arises, as to what to select and how much of it? Nutritional requirements vary even for the persons of the same age, sex, and size. Children and pregnant women need relatively large amounts of protein, minerals and vitamins. Labourers who are engaged in physical and manual labour need more energy foods than those who lead sedentary life. But for every diet, whether for old or young, active or inactive persons-there are certain basic

requirements. These are water, vitamins, proteins, minerals, carbo-hydrates and fats. No one food has all the nutrients in the amounts needed. For vibrant health and long life, once choice should fall on balanced diet which supplies ideal amount of proteins, carbohydrates, fats, vitamins, minerals and liquids required in accordance with one's age, sex and size. Such a diet promotes physical well being, mental alertness, beauty and longer life. One's wise choice of food can go a long way in preventing ageing process, and many ailments and diseases. The wise selection and proper combination of foods is always fair. One of the important points in the combination of food is well balanced foods in acid and base forming elements. Acid forming foods are those which yield, upon burning, an ash in which acid material predominates. These foods are represented by meat, egg and cereals and base forming foods are those which yield an alkaline ash. There are also certain foods that are called neutral because they do not have an excess of either of acid or of alkali. They are represented by starch, sugar, fats and oils. The wise adage "clean living goes with clear thinking," stands true for all times. The recent research on food and nutrients has established that when a person takes food under stress and strain of work and worry, the digestive process is hindered. Eating should be done with cheerfulness and without any fear or care. A Hebrew sage has said, "A merry heart doeth good, like a medicine." A happy and optimistic person may enjoy better health. Another sage has said, "A broken spirit drieth the bones." A pessimist always looks on the gloomy side of things. He is depressed and discouraged with everything he sees. His unhappy attitude influences his digestion and circulation. Sufi saints believe "Food eaten with anger turns to poison, food eaten without concentration is empty, food eaten at a business lunch by politicians who smile while plotting each other's downfall breeds ulcers."

Diet has close relation with the mind. The diet should be such as can maintain physical efficiency and health. The well being of a person depends more on perfect nutrition. One should be able to choose cheap and well balanced diet and not a rich diet. A rich may produce disease of the liver, kidneys and pancreas. A well-balanced diet helps a man to grow, to turn out more work and keep in the efficiency, stamina and a high standard of vim and vigour.

In Yoga, diet is classified into Sattvic, Rajasic, and Tamasic diet. Lord Krishna says to Arjuna: "The foods that augment vitality, energy, vigour, health, joy and cheerfulness, which are savoury and oleaginous, substantial and agreeable, are liked by the *Sattvika*". (Gita 17-8).

"The foods that are bitter, sour, saline, over-hot, pungent, dry and burning are liked by the *Rajasika*, and are productive of pain, grief and disease." (Gita 17-9).

"That which is stale, tasteless, stinking, cooked overnight, refuse and impure is the food liked by the *Tamasika*". (Gita, 17-10).

Yogic diet is Sattvic diet. Milk, Barley, wheat, cereals, butter, cheese, honey, tomatoes, fruits are Sattvic foodstuffs. They render the mind pure and calm. Gluttons and epicureans and Tamasic people cannot feel satisfied with Sattvic diet. Again, Lord Krishna says:

"Yoga is not possible for him who eats too much or for him who abstains too much from eating, it is not for him, O Arjuna, who sleeps too much or too little". (Gita, 6-16).

The wire of a vina snaps if tightened too much and becomes devoid of music, if loosened too much. In the art of partaking of food, the Yogi is to act like a properly tuned vina bringing out the best music. If he over-eats

he becomes a dullard, if he undereats he becomes weak. In regard to the quantity and sort of food, one's physique is not the standard for another's. Each Sadhaka has to fix them for himself. Sleep brings rest and tones the system, but over or under indulgence in it aggravates "Tamas" or inertia. Swami Ramakrishna has said, "A Sadhaka ought to help himself to that food only which is not heating to the body and exciting to the mind."

Again Lord Krishna says, "For him who is moderate in eating and recreation, temperate in his actions, who is regulated in sleep and wakefulness, Yoga becomes the destroyer of pain." (Gita 6-17).

Wind creates storm in the sea. The wind of desire creates commotion in the mind. Mind is formed out of the subtlest portion of food. Sage Uddalaka advised his son Swetaketu, "Food when consumed becomes threefold, the gross particles become excrement, the middling one's flesh, and the fine one's the mind. When curd is churned, its fine particles which rise upwards form butter. Thus, my child, when food is consumed, the fine particles which rise upwards form the mind. Hence, verily the mind is food."

Yogic diet is sattvic, balanced but lacto-vegetarian diet. It has been found that meat augments animal passion and decreases intellectual capacity. Carnivorous food makes one callous and passionate. Meat eaters are more prone to host of ailments of kidney, liver and heart. Pythagoras the Greek philosopher, defending vegetarian diet has said, "Beware, o mortals, of defiling your bodies with sinful food. There are cereals, there are fruits bending their branches down by their weight, and luxurious grapes on the vines. There are sweet vegetables and herbs which the fire can render palatable and mellow. Nor are you denied milk, nor honey, fragrance of the aroma of the thyme flower. The bountiful earth offers you an abundance of pure food

and provides for meals obtainable without slaughter and bloodshed."

Sattivic, Rasjasic and Tamasic articles of diet

<i>Sattvic</i>	<i>Rajasic</i>	<i>Tamasic</i>
Cow's milk	Eggs	Beaf
Cream	Eggs	Pork
Cheese	Meat	Wine
Butter	Salt	Onions
Curd	Chillies	Garlic
Ghee	Chutney	Tobacco
Sweet fruits	Asafoetida	Rotten things
Honey	Pickles	Stale things
Apples	Mustard	
Bananas	Sour things	Twice cooked things
Grapes	Hot things	
Papaya	Tea, Coffee,	All intoxicants
Pomegranates	Cocoa	All liquors
Mangoes		Ovaltine
Oranges	White sugar	
Pears	White sugar	
Pineapple	Carrots,	
Guavas	Turnips	
Figs	Spices	
Vegetables		
Coconut,		
Brinjals, potatoes		

(Contd.)

Sattvic

Cabbages, spinach
 Tomatoes, Cucumber,
 Pumpkin, Cauliflower
 Ladies finger, peaches

Honey, milk, green vegetables and fruits are part and parcel of yogic diet. Honey is both food and tonic. It contains all the minerals found in the human body. It contains 80 per cent of nutrient, sugars, levulose, and dextrose, formic acid, iron, enzymes and is easily absorbed in the blood. It is also heart stimulant and is highly beneficial in cases of malnutrition. It is a better substitute of cod-liver oil. It invigorates energy, tones up the nerves, improves health and vitalises the entire system. Milk is a complete ideal food in itself. It contains all the nutrients in a balanced quantity. Fruits and milk form a very healthy wholesome diet. Among the different foods, fruits are at the top. The curative effects of fresh juicy fruits are remarkable.

According to Yoga, one should live a simple natural life. One should select simple food that is agreeable to one's system. An individual is himself best judge to select a sattvic diet. Yoga does not recommend craving for any particular food or drink. Today, man has invented thousands of dishes just to satisfy his palate and senses. He feels upset when he does not get dishes of his choice in a new place. Modern man has become slave to his tongue. Yoga recommends natural, non-stimulating, tissue building, energy-producing, non-alcoholic foods which keep the body fit and mind calm, pure and restful.

It is not by balanced diet or yogic diet alone, but by truthful living, right thinking, right action, right conduct, by observing the laws of health and hygiene,

by taking regular Asanas or exercises, by taking cold baths, by drinking pure water, one can have harmonious healthfull of vim, vigour and vitality.



Fig. 6.1: Balanced Diet

Rest and Yogic Relaxation

Modern man feels tense, over-wrought, nervous and anxious. He can neither cope with nor escape from the relentless demands of modern life. He takes recourse to "drugs", happy pills, tranquilisers and beverages which may give him temporary relief and respite but in the long run, they prove disastrous to his mental and physical health. The word "tension" has been interpreted variously by various psychologists. There are almost as many feelings and descriptions regarding "tension" as there are persons who experience this type of feeling, discomfort and uneasiness. That valid and widely accepted definition as "Tension is a feeling of tightness or squeezing that occurs in organism mentally, emotionally or physically." Under these condition, one feels tightness and discomfort. He squeezes himself mentally, and feels headache. When he gets up tight emotionally and feels uneasy, he contracts himself physically and experience many aches and pains. It is these feelings in varying degrees that are experienced by people during any moment.

For heart patients, rest and relaxation are of paramount importance. Yogic relaxation is not lethargy or escape. It does not mean stillness or in-activity. Yogic relaxation implies becoming much more alive and aware than one usually is. The necessity for yogic relaxation today is for more pressing than it ever was. Modern man

says, "yes, yogic relaxation is fine but I have not the time." He does not realise the importance of yogic relaxation which can refresh him and release his tension, nervousness, anxiety and uneasiness. In yoga, controlled breathing and complete relaxation are both preventive and curative. Cicero, the great philosopher has said, "Relaxation is the source of creative thought, only the man who knows art of relaxation, is able to create, and ideas reach his mind like lightening." The art of yogic relaxation can be acquired. Every one should know how to relax consciously for a couple of minutes everyday, so that he can feel relaxed in any situation. For a laymen, it is essential to know the anatomy of the muscle. In human body there are two types of muscles—voluntary and in-voluntary. The voluntary muscles are attached to the skeleton and allow us action and movement at will. The involuntary muscles surrounding the duets of the body constitute the greater part of the hollow organisms. These muscles relax and contract in automatic movements and are free from voluntary control. It is the nerve which stimulates the muscle to action. The muscle can be compared to an electromagnet and its nerve to the electric wire which connects it to the brain. The muscle contracts as and when it receives message from the brain. Yet a third type of muscle tissue is found known as heart muscle. This is exclusively found in the heart and is most important. It is involuntary and yet possesses certain characteristics similar to voluntary skeletal muscle. The one characteristic which is common to all three varieties of muscle is contractility, a muscle can alter its length and breath easily and rapidly. Some people do jogging, warm up, and stretching, physiotherapy exercises. No doubt, these exercises are effective for some parts of the whole body. These exercises can be done any time by anybody without any special skill. These exercises tone

up the muscles and improve the digestive system. Jogging is one of the natural ways to set the body in motion and to release tension in a vigorous way.

The premature degeneration of heart can take place because of sedentary, lethargic lives which most people lead. Sometimes, the sign of this degeneration is obesity. Stretching exercises or jogging force the lungs into working more and more. When more oxygen is needed by the heart and other muscles in the body, the lungs will have to work more and more. The muscles of our body need oxygen in order to convert fat into energy. If the muscles do not make demands on the heart and lungs, these will atrophy and become weak and reduce their capacity. The circulatory system is also affected if there is no sufficient supply of oxygen from hard-working muscles. In jogging most muscles of the body particularly these in the legs are involved. The lungs are forced to breathe in more oxygen. It has been established that regular exercises and jogging increase the diameter of the capillaries considerably.

Since yoga treats human body as a flower. In yoga relaxation exercises strain is not involved. Yoga relaxation postures tone up not only muscles, ligaments and joints but also all parts of the body. The yogic relaxation is super relaxation which in a few minutes relieves mental tension and physical fatigue. The muscles contract as and when required in response to a message from the brain centres. During sleep man withdraws from the outside world and the conscious mind remains passive. It is only through conscious and voluntary action to disconnect more totally than in sleep those wires which lead to various electro-magnets, thus reducing the consumption of narrow impulses to the minimum. This is yogic relaxation or super repose. According to yogic relaxation, it is not only the mechanical silence, that matters, but silence from

within also. In yogic relaxation mind controls the body entirely disconnecting the conductor-wires one by one, reducing the flow of current to the electro-magnets of the muscles throughout the body almost to nil. In yoga, classic Asanas for relaxation are Shavasana, Advasana, Makarasana and Jajestikasana. The technique and benefits of these Asanas have been discussed in the chapter 'Asanas'.

Generally, people misuse the hours of leisure, rest and relaxation. Some feel relaxed in coffee houses, clubs, bars or dhabas, hotels and restaurants while playing cards or idle gossips and some feel relaxed under the influence of liquor, puff or other intoxicants. Shavasana is the only Asan that provides right relaxation to our psycho-physiological system. One who has mastered the art of Yogic relaxation can remain relaxed in every situation. Breathing and relaxation are bound up with each other. While relaxing, mind is to be concentrated on breathing. It is not as easy as it appears to be. One has to observe where and how one is breathing. When breathing centre of gravity should lie in the middle of the abdomen, between the navel and sternum. The breathing must be slow, rhythmic and longer. It is said longer breaths have longer life. For heart patients yogic relaxation is a great tonic. If a person suffering from heart ailments, practices Asanas as mentioned earlier, particularly Shavasana, the result would be the renewal and stabilisation of nerve cells, relieving of tension, mental, muscular or nervous and attaining of complete physical and mental relaxation.

PART-II

DIABETES

1

What is Diabetes?

Since the dawn of human Civilization man has struggled to live in accordance with his Environment. The climatic and environmental conditions have made man victim of innumerable diseases from time to time. From ancient times man has discovered ways and means to treat and cure physical ailments and mental disorders. In our age of Intellectual crisis, man has invented wonderful drugs and techniques for the treatment and cure of most dangerous diseases.

Diabetes is very old and common disease, and millions of people all over the world suffer from it. The rate and number of diabetic patients is more in developed countries than in the under developed., More in cities than in villages.

Diabetes Insipidus is a disease characterised by the Excretion of large volumes of urine of a low specific gravity accompanied by an abnormally great thirst. It is caused by destruction of the neural lobe of a pituitary gland or by liaisons in the nervous connections between the hypothalamus and that lobe.

Diabetes Mellitus :- is a conditions in which the body is unable to metabolize Sugars and other food materials efficiently. This disease is commonly termed "Diabetes" and it appears when there is a relative but not

necessarily an absolute deficiency of Insulin in the body. The first suggestion that the pancreas is necessary for the complete utilization of carbohydrates in the animal body was made by John Conrad in 1682. The relationship of the pancreas to diabetes was first suggested in 1788 by Cowley an English Physician in 1889, J. Vonmering showed that the complete removal of the pancreas from dogs resulted in a condition that is practically identical with diabetes mellitus in man. Although scores of Investigators attempted to secure an antidiabetic substance from the pancreas. This substance called Insulin, was not proved to be present until 1921. In some cases the diabetic condition may be the direct result of a decrease in the formation and secretion of Insulin by the pancreas, while in others the defect may be primarily the result of an altered activity of glands. There are clear references of Diabetes in the ancient literature of Egypt, China, and India. No age group is Exempted, but most patients are over 40 at the onset of the disease and there are more female than male patients at this age. Obese persons are more liable to develop diabetes than are persons of normal weight. About 25% of all diabetics have relatives who are diabetics., hereditary predisposition toward the disease is established.

Estimates of the occurrence vary from 1-2 to 2% of the population., about half of these cases are believed to occur in persons who are unaware that they have the disease. The untreated diabetic patient suffers from Extreme thirst, hunger weakness and loss of weight. He Excretes abnormally large quantities of urine of high specific gravity (1.030 to 1.050) Compared with a normal 1.015 to 1.020). His urine contains sugar and other substances not usually present. He is very susceptible to infection, and the infection when established is difficult to eliminate. The diabetic condition is

suspected when a patient complains of one or more of these signs and symptoms. A person may be a mild diabetic for a long time before he is aware of his condition. Diabetes as a rule advances comparatively slowly except in the young in whom it often progresses so rapidly that the patient develops an acidosis, vomits and lapses into coma within a few days. The routine analysis of the urine as a part of the physical Examinations given to persons applying for life Insurance or entering the armed forces has resulted in the early diagnosis of many cases of previous unsuspected diabetes. The prognosis of the early case is of course much better than that of the advanced, since treatment can be instituted earlier in the course of the disease. The amount of sugar in the blood under certain conditions is a valuable indication of the severity of the disease. The presence in the urine of the so called Ketone bodies (acetone, aceto-acetoc acid) which appear in the urine as a result of the Excessive breakdown of fats, is a warning that acidosis and coma are imminent. The presence of these substances in the body can sometimes be suspected from the odour that acetone gives to the breath. The most characteristic finding is that of sugar in the urine, though it alone is not diagnostic of the diabetic condition. The amount of sugar thus Excreted may be small or very great, depending upon the severity of the disease and upon the amount of sugar starchy food eaten by the patient. Because diabetic patient does not use sugar as readily as a normal person, sugar accumulates in the blood to higher levels than normal and the Excess is excreted in the urine. The metabolism of fats is increased to such an extent that the Ketone bodies, which are the Intermediary products of fat metabolism, are not completely oxidised as in the normal person and these substances also accumulate in the blood and are excreted in the urine. The

complications of inadequately treated diabetes are many and serious. Vision may become impaired. Skin infections of all kinds may occur and prove very intractable. Boils, Carbuncles and gangrene are apt to occur as life advances. There is especial danger of gangrene of the toes and feet. Diabetics are especially liable to tuberculosis. Digestive troubles, Kidney diseases and diseases of the heart commonly occur. But the most serious complication of all its diabetic coma. A very serious condition called hypoglycemia may be produced in a diabetic patient by an overdose of Insulin or by insufficient or delayed food intake, Excessive physical Excretion, nervous tension, diarrhoea, menstruation or infection.

2

Causes and Symptoms of Diabetes

Diabetes "The Silent Killer" is a very old and Common disease, and millions of people all over the world suffer from it. The rate and number of diabetic patients is more in developed countries than in the under developed. The causes of the disease are innumerable and complex.

1. Heredity: Heredity is supposed to play a part. It is true to some Extent that if the parents, either both or either of them has had diabetes, their Children will also have diabetes. But there are innumerable cases contrary to this, But the off-spring of diabetic parents has higher chances of inheriting diabetes from its mother. Mothers who had been diabetics prior to conception, are likely to pass on such a disease to their off-spring. It will not be fair to presume that all the children of diabetic parents will be diabetic. Parents who are indolent, inactive, obese, drunkards who eat too much must warn their children to keep away from such things.

2. Obesity: Obesity (Fatness) is an abnormal increase of fat in the subcutaneous connective tissues. The Hazard of obesity is that it shortens the life span and causes atherosclerosis, Coronary heart trouble and diabetes. We have to differentiate obesity from over-weight. Overt-weight is not obesity. But every obese person is over weight. Though obesity causes the same Extra fat in men and women. But in women fat generally

accumulates in the hip area and in the thighs. But in men accumulation of fat is mostly in the abdominal area and thighs. In some cases fat is not localised but covers the whole body. Obesity (Fatness) is caused by too much eating. Over eating excessive use of fats, Carbohydrates, and thyroid's malfunctioning. Obesity can give birth to diabetes, gout, Asthma and heart problems. It has been said that obesity is the mother of many diseases. Sometimes constant and prolonged use of oral contraceptives, insulin and steroids increase appetite and the patient wants to eat more. After pregnancy and delivery of child, when the mothers are given aforesaid medicines, there is every chance of becoming fat.

3. Diet: Diet is of paramount importance. Specified diet cannot be prescribed for two persons alike. While prescribing dietary regimen age, sex, profession, health status must be taken into consideration Fats, fried and roasted things can cause constipation which can give birth to diabetes. A diet which has more of carbohydrates, more of proteins more of fats can cause digestive disorders and diabetes.

4. Malfunctioning of Endocrine Glands: The pancreas, thyroid, pituitary and Adrenal glands play very important role in our body. There are also millions of cells in our body. When cells do not function properly different problems can arise and give birth to different diseases. Our cells in the body can function properly if they are nourished by various food constituents like carbohydrate, protein, fats, vitamins and minerals. Any malfunctioning of glands and cells can cause diabetes. Consumption of much sugar can be the leading cause of diabetes. If a person consumes Excessive amount of sugar, the Excessive amount of sugar producing food stuffs (after the body has utilised the required quantity of sugar) the Extra sugar will pass on to Urine. When there is inadequate secretion of Insulin by pancreas,

there is every chance of diabetes. The functioning of pancreas, Thyroid, Pituitary and Adrenal glands have been discussed in a separate chapter.

5. Alcohol: Excess of Alcohol can cause liver disorders and diseases. Alcohol can harm the liver and cause diseases like Hepatitis and Cirrhosis. These diseases can cause impaired glucose tolerance and Consequently give birth to Diabetes.

Symptoms

Diabetes metlitus is a disease of metabolism, the outstanding Characteristic of which is lessened ability, or the complete inability of the tissues to utilise carbohydrate. There appears to be a disturbance of the balance of the several hormones produced by the pancreas, the pituitary, the adrenal, the thyroid and other glands. The disturbed metabolism in Diabetes brings about the following symptoms of the disease.

1. Polyuria or a frequent and abnormally large outflow of urine, results when glucose passes through the kidneys in Excessive amounts.
2. Polydipsia or Excessive thirst, is explained by the great loss of body fluids in the urine and the need for replacement in the tissues.
3. Dehydration is occasional by the Excessive Urinary output and the failure to balance it by water in take.
4. Polyphagia or increased appetite, results from failure to utilise the foods for nourishment of the body cells.
5. General weakness and Loss of weight follow the inability to use foods and the subsequent breakdown of body tissues.
6. Decreased resistance to infection, especially staphylococcal infection and tuberculosis,

- becomes apparent in untreated and poorly regulated cases of diabetes.
7. Decreased Ability of Tissues to Heal: High blood sugar, edema and dehydration are not conducive to healing processes.
 8. Degenerative changes such a peripheral neuritis, retinitis, disease of the coronary arteries are evident in advanced cases, especially those which have been poorly controlled.
 9. Ketosis or acidosis is the accumulation of lower fatty acids in the blood and may ultimately lead to Corna and even death.
 10. Pruritus: Pruritus is intense Itching of skin. But in Diabetes, there is pruritus on and around genitals and the patient goes on scratching until there is bleeding from his skin.
 11. Eye Problems: The vision of diabetic patient becomes opaque and hazy, his retina is adversely affected. Neglect may lead to partial or total blindness.
 12. Neuropathy: It is a symptom which is characterised by weak and numb nerve-power. He often feels that his calves and legs are weak and senseless. Moreover, he often complains of pain in body.
 13. Malaise: The diabetic patient often remains sad and gloomy. He is often seen in a depressed or melancholic mood. He does not feel any interest in work.
 14. Sexual Apathy: The patient loses the urge to perform sex acts. Some patients get easily Excited but are not able to satiate their sexual desire.
 15. Phimosis: Phimosis is narrowness of the opening of the propuce, preventing its being drawn back

over the glans. It is a common complaint with diabetics that their propuces get constricted and thus can't be drawn up the glans-penis. Sometimes this problem appears with children but diabetes can make it complicated at a later stage.

16. Gangrene and infection of Toes: In diabetes any foot injury can take any serious form, if not treated properly. If any injury fails to heal, then decay of the affected part may occur which may result into amputation of that affected part. Glycosuria or the occurrence of sugar in the urine should be regarded as evidence of diabetes until proved otherwise. For Example, pentosuria is the result of the body's failure to use the carbohydrate known as pentose. Lectosuria may occur in nursing mothers., alimentary glycosuria may result from Extra dietary loads of carbohydrate, and renal glycisuria may result from a reduction of the ability of the tubuleless at absorb glucose. Hyperglycemia or a blood sugar above 120 mg per 100 cc, may be determination of the concentration of sugar after a fast of 12 hours. It indicates that glucose from the food and glycogen is not being used. Ketonuria or the Excretion of Ketones occurs when fatty acids are incompletely oxidised in the body.

The glucose in the body can originate from three nutrients namely, carbohydrate, protein and fat. The blood normally maintains a glucose concentration of 80 to 120 mg per 100 cc. If glucose cannot be utilized in the tissues, the concentration in the blood increases. If the fasting blood sugar content reaches 140 mg per 100 cc, there is reason to suspect diabetes. Sugar begins to spill over into the urine when the renal threshold is reached. In severe diabetes, the fasting blood sugar may be as high as 200 to 400 mg per 100 cc.

Fatty acids are derived from the food and body fats and also from food and body proteins. About 90 percent of the fat molecule yields fatty acids, while a little less than half of the protein molecule yields fatty acids. The fatty acids are broken down by the liver to 4, carbon-atom residues commonly called ketones. In diabetes with the failure to synthesise glycogen and to utilize glucose. The glycogen stores of the liver are rapidly depleted.

In Nephropathy, the kidney gets damaged. If the blood sugar is allowed to remain uncontrolled for a longer period and sugar is Excreted by the kidneys through urine and also when vital fluids, due to malfunctioning of the kidney, escape through urine Excess concentration of sugar in urine harms the filtering functioning of the kidney.

Sometimes mental symptoms such as fear psychosis, Neurosis, and Phobia can be detected in Diabetic patients. In some acute and chronic cases, thinking gets perverted. The patient feels emotionally upset is not able to attend social functions, drinks, sumptuous meals, and has to take restricted diet as advised by the doctor. But the patient should not feel depressed, deprived or frightened. With the control of diet and proper medicine and Yoga, the disease is controllable. It is necessary for the diabetic and his family members not to feel mentally tense, panicy, excited or disturbed, Instead face the problem in a planned management and cheerful spirit.

Sometimes stomatitis (Inflammation of the mucous membrane of the mouth) can be detected as a symptom of diabetes in the patients. It means inflammation of whole of submucous portion of the mouth when tongue and the surrounding areas are red with small pimples.

3

Functioning of Glands

Glands are structures which secrete fluids. They are Classified according to their mode of secretion, the nature of the secretion, the behaviour of the gland cell and the organization of the gland. The mode of secretion may be toward the outside of the body (Exocrine) or toward the blood any lymph vessels (endocrine). The secretion may be characterised as cellular (as in the testis) or noncellular (prostrate, thyroid or salivary glands). The gland may be composed of a single cell or of a simple or complex organization of cells. The gland cells produce their characteristic secretions either through cellular activity without any direct contribution of the protoplasm (merocrine type, as in salivary glands) or through cellular disintegration (holocrine type as in sebaceous glands or apocrine type, as in mammary glands).

The unicellular glands in mammals are limited entirely to goblet cells. The gland cells produce their characteristic secretions either through cellular activity without any direct contribution of the protoplasm (merocrine type as in salivary glands) or through cellular disintegration (holocrine type, as in sebaceous glands). The gland cells may be arranged as punched out projections, generally toward the connective tissue frame work. These projections may be simple (as in intestinal glands) or branched (as in gastric glands).

All compound glands are enclosed in a connective tissue capsules. The glands are partly broken up into grossly visible lobes (as the liver which has fire lobes) in relation to major branchings of the duet system. These are further partly separated into smaller units, the lobules which are also visible with the naked eye. These are in turn further divided into microlobules which are visible only with the microscope. All four components of glands (Secretary, ductular, connective, and vascular and neural) consist of cells and a cellular cement or binding substance. In the connective tissue the cement substance with its fibres is the most prominent feature, the cells being sparse. In the other three gland components, the cells are most conspicuous, the cement substance being small in amount.

Some gland cells show little or no detectable changes in structure whether they are secreting or not. Others pass through cyclic morphological changes during strong secretion and then revert to the normal or relatively inactive state. Gland cells, like all other cells, must be considered to be in a state of continual activity. Even "restive" cells are active performing work in maintaining their integrity and internal organization, and in synthesizing and secreting their specific substance of secretions at minimum levels.

(a). Hypothalmus: The hypothalmus is a small compartment of the brain whose principle function is to control a number of vital processes such as sleep, body temperature and appetite. The hypothalmus does not appear to be directly responsive to the conscious mind. Nerves pass from the hypothalmus and have a regulatory influence on posterior lobe activity. Some hypothalmic cells possess glandular characteristics, and there is evidence that anterior lobe function may be regulated by hypothalmic neurohumours passing through the blood stream to the pituitary body.

(b) Thyroid Gland: The thyroid gland is located in front and on either side of the trachea just beneath the larynx. The gland synthesizes the only iodine containing hormones in the body, the amino acid thyroxin and several close relatives. The thyroid hormone affects the metabolism of practically all the tissues of the body. The principle function of the hormone is to regulate the rate of oxygen consumption. An Excess of thyroid produces hypermetabolism and a deficiency produce a low metabolic rate. The hormone is also required for the normal growth and development of the brain. In its absence the gonads and sometimes adrenal cortex do not function effectively.

Iodine is also required in order to maintain a normally functioning of thyroid gland. If the Iodine content of the diet and drinking water are deficient or a drug prevents the gland from utilizing the circulating iodine, then synthesis of the hormone can result in goitre formation. Hyperthyroidism (thyroid Excess) is characterized by an elevated basla metabolic rate. The characteristic symptoms are nervousness, weight loss despite an increased appetite, a rapidly pounding heart and heat intolerance. Hypothyroidsm (thyroid deficiency) leads to a slowing of both physical and mental processes. The skin becomes dry and hair is lost and the patient is sensitive to cold. In the adult the condition is known as myxedema.

(c) Adrenal Glands: The adrenals are rather small glands located just above the upper pole of each kidney and are in reality two glands in one, the medulla or inner portion and the cortex or outer portion.

The adrenal medulla is composed of chromaffin cells similar to those found scattered near the ganglia of the sympathetic nervous system. The medulla receives nerves from the sympathetic nervous system and secretes its hormone in response to nervous stimulation.

Epinephrine (adrenaline) and closely related norepinephrine (non adrenaline) are secreted simultaneously. The proportions of each secreted vary widely from species to species. These secretion comprise an important element of the sympathetic nervous system's regulation of vascular tone and cardiac action. The effects of the two compounds differ somewhat. Considered together, however, as they are secreted epinephrine and norepinephrine constrict peripheral blood vessels, increase the cardiac output, elevate the blood pressure and increase the concentration of blood glucose. In response to severe unfuries, haemorrhages and other shocks of the body, the secretions of the medulla are increased thus it plays an important part in supporting the organism in times of stress. The secretion of the hormones of the medulla may also be increased as a result of emotional stimulation. Pheochromocytomas, hormone-secreting tumours of the adrenal medulla, may cause nervousness, hypertension and diabetes. The metabolic rate is always elevated during the active phases of this condition.

The adrenal cortex secretes several steroid hormones whose combined effects are to preserve homoeostasis in several metabolic areas. The principal secretions are probably hydrocortisone, Corticosterone and aldosterone. These secretions play a role in regulating rates of protein tissue breakdown. Utilization of carbohydrate by peripheral tissues, mobilization of fat for energy purposes, maintenance of vascular tone and renal Excretion of sodium, Chloride potassium and water. Hydrocortisone is the most effective hormone with respect to the influence on carbohydrate, protein and fat metabolism. Aldosterone is particularly potent in conserving salt. Maintenance of the gland requires the presence of pituitary corticotrophin. Aldosterone secretion is more or less

independent of pituitary action. The adrenal cortex-pituitary axis is activated by a wide variety of bodily injuries. Apparently at time of stress the body requires more adrenal hormones. The adrenal deficient organism is unable to withstand even moderately severe stress. Chronic hypersecretion of corticoids as a result of adrenal stimulation by basophilic pituitary adenomas or by functioning adrenal tumours produces Cushing's syndrome in man. This is characterized by hypertension, diabetes mellitus obesity confined to the trunk, hirsutism and gonadal hypofunction.

(d) Pituitary Glands: The pituitary gland or hypophysis is a small body (Weight 0.5g in man) located beneath the central portion of the brain to which it is attached by a thin stalk. The gland may be divided anatomically into an anterior portion, which secretes least six active principles, and the posterior lobe or parts nerves which secretes two hormones. All the pituitary hormones are proteins or protein fragments. The gland is comprised of at least three types of cells differentiable by their reaction to stains. They have been termed eosinophiles, basophiles, and chromophobes. It has been possible to reduce with some accuracy the type of cell that secretes each of the active principles.

(e) Pancreas: The pancreas is located in the abdomen near the duodenum, the first portion of the small intestines.

The pancreas secretes the hormone insulin and digestive ferments that enter the duodenum. Insulin, a protein, is synthesized by the beta cells of the Islets of Langerhans. Insulin is the prime hormone concerned with the regulation of the blood glucose (sugar) level. Its effect is to lower the glucose concentration. When the glucose concentration is lowered by insulin the glucose is not converted to some other compound within



Key: 1 Inferior vena cava, 2 Liver and portal vein; 3 Hepatic duct, 4 Cystic duct, 5. Gall bladder; 6 Lesser pancreatic duct, 7 Common bile duct, 8. Ampulla of Vater; 9 Duodenum; 10 Abdominal aorta, 11. Celiac artery and right ganglion of celiac plexus; 12 Superior pancreatic lymph node; 13. Spleen and splenic lymph nodes; 14 Greater pancreatic duct, 15. Pancreas; 16 Jejunum

Fig. 3.1: Macroscopy of the Pancreas and its Duct System

the blood but the rate of its removal and utilisation by tissues is enhanced. Some of the glucose is consumed for energy and much of it is stored as glycogen in muscles and in the liver. Insulin deficiency leads to Diabetes a disease characterised by hyperglycemia (Elevated glucose in the blood). The loss of large amounts of glucose is followed by weight loss. The administration of Excessive amounts of Insulin produces hypoglycemia with attendant symptoms of weakness, sweating, Confusion, double vision and sometimes loss of consciousness and generalized convulsions.

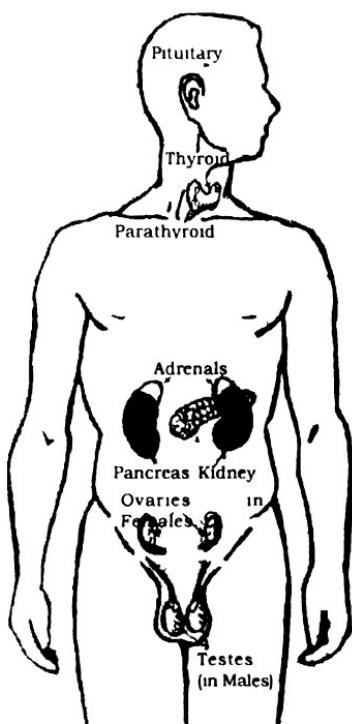


Fig 3.2 Approximate locations of the endocrine glands in the human body (Kidneys, fallopian tubes and sperm ducts, are shown only to indicate position of some of the glands)

4

Yogasanas for Diabetes

Basically, human being has capacities for movement. He has all the necessary neuro-muscular mechanisms which make him move, act, react, run, walk, throw, bend, swim, climb, and dance. In the process of Evolution, movement, is basic to any advancement which man has made. Yoga being a practical discipline, while taking care of physical aspect of an human personality. There are systems which regard body as a complete world in itself and then proceed to cultivate it as such and make it a more efficient instrument of physical fitness. But there are also systems which regard man is not only a physical body but as an active mind also. Those who try to look upon man as a mere body, tend to ignore a vital aspect of his personality -----the realm of mind. Famous sufi saint Bullhe Shah rightly said, "Mind is deeper than all the rivers and seas" Who can fathom it"? Votaries of this system-----skin to Yoga----- seek to develop the body but also make use of the mind, its power of will, its suggestions and resolutions a great deal in order to develop health, increase strength and enhance capabilities of the body.

The great sage Patanjali has defined Asan "Sthiram, Sukham Asana". That posture which is comfortable and steady. Asan implies a posture in which one can remain steady, calm and comfortable. Pure physical Exercises have only a physical Effect on the muscles and bones. But Yogasanas aim at the harmonious development of

body. Mind and soul. Different Asanas have different effects on the organs of the body. In our body organism cells, tissues and glands play a vital role. One diseased gland can effect the whole system. Due to malfunctioning of Glands, different diseases are born. Diabetes is caused when the secretion of the endocrine glands, Pancreas, Thyroid, Pituitary and Adrenal is not normal. Persons suffering from Diabetes are advised to do following Asanas regularly and Punctually. But they should bear in mind that Asan is not a physical posture. In Asan one has to be very careful about breathing and concentration. The three stages of breathing Inhalation, Retention and Exhalation are to be maintained. Persons suffering from Diabetes are not to do Yogasanas at random or in accordance with their whims or fancy. They have to under go the process of selection and rejection. Every practitioner of Asanas must keep in mind some basic important principles before starting Asanas. Asanas must be practised regularly and punctually preferably in the early morning hours. Asanas must be done with faith, determination and tenacity and without any interruptions and distractions. It is much convenient and hygienic to practise Asanas in the morning, first washing and cleaning your teeth and mouth, evacuating the bowels. Asanas should not be done with tight dresses or garments on the body. Spectacles, Watch, rings, waist belts, boots, brasiers, sandals should be removed while doing Asanas. Asanas may be practised in a quiet, calm and secluded airy place in fresh air. In unfair and unpleasant weather the Asanas may be done in an airy room or Verandah free from mosquitoes, flies, ants and bugs. The Asanas should be practised on a folded blanket or soft carpet or a folded rug laid on the floor. During the practice of Asanas and the Pranayama no strain or stress or jerk should be felt in the facial muscles, ears and eyes, Except in the case of Simhasana, the eyes and mouth should remain closed.

while doing Asanas. Breathing should be done through nostrils and never through mouth. After doing each Asan, rest must be taken for a couple of seconds. After completing all Asanas Shav Asana (the corpse) pose must be done for at least ten minutes. Women during the period of conception, mensuration, pregnancy or any female disorder should not do any Asana Except Adva Asana and Shav Asana. Persons suffering from asthma tuberculosis, leprosy constipation, dysentery, arthritis, abdominal disorders, hyperacidity, high and low blood pressure should not do Asanas without the advice of the qualified Yoga teacher. There are different Asanas with curative and preventive effects for different diseases. It is essential that the practitioner of Asanas should Shun Bidi, Cigarettes, Wine, Charas, Opium and all other intoxicants. Faulty postures and wrong methods of doing Asanas can be harmful. Persons suffering from Diabetes are advised to do only following Asanas.

1. Siddhasana (Adepts Pose)

Siddha in Sanskrit means adept. Yogis and Rishis have spoken high of this Asana. Great saints and sages like Nityamatta, Niranjana, Kapali, Sabar used to meditate in this Asana for hours together.

Technique

Sit on the folded rugged or folded blanket on the floor, bend the left leg and pull the foot in against the groin. Now bend the right leg and bring the foot across and insert its outer edge in the Crease between the calf and the thigh of the left leg. The right heel should press against the pubic bone and both the knees should touch the floor. Keep the palms of the right and left hands on the back in a straight line.



Fig. 4.1: Siddhasana

This Asana develops mental potentiality, Soothes the muscles, tones up the nervous system, increases power of concentration, supplies sufficient blood to the pelvic region and keeps the body in poise and equilibrium.

2. Simhasana (The Lion Pose)

Simha in Sanskrit means lion. This pose appears to be odd, unpleasant but is very much rewarding and rejuvenating. In this Asana alone breathing is done through mouth. This Asana is held sacred by the best of Yogis.

Technique

Sit on a folded blanket with legs stretched straight in front. Raise the seat, bend the right knee and place the right foot under the left buttock. Similarly bend the left knee and place it under the right buttock. The left ankle

should be kept under the right one. Sit on the heels with toes towards backwards and put the weight of the body on the thighs and knees stretch the trunk forward and keep the back erect. Place the right and left palms on the right and left knees. Open the mouth and eyes wide and protrude the tongue out and down as far as you can.



Fig. 4 2: Simhasana

Gaze at the centre of the eye brow a at the tip of the nose. Remain in this pose for a couple of seconds.

This Asana will direct the flow of blood to the throat and larynx and will tone up the muscles of the face and throat. This Asana is beneficial for Thyroid gland. It can also increase the glow of the face and eyes and remove constipation.

3. Sarvangasana (Shoulder Stand Pose)

In Sanskrit Sarva means all or entire and Anga means limb or all the limbs. This is one of the most

powerful and popular Asanas. By practising this Asana circulation is directed toward the thyroid parathyroid and endocrine glands which play vital role in Diabetes. To drive maximum benefit from this Asana. Hal Asana should be done after this Asana. In Sarvargasana, inhale breath while raising up the legs, Retain breath as long as legs are in the air. Exhale breath when the legs are lowered down.

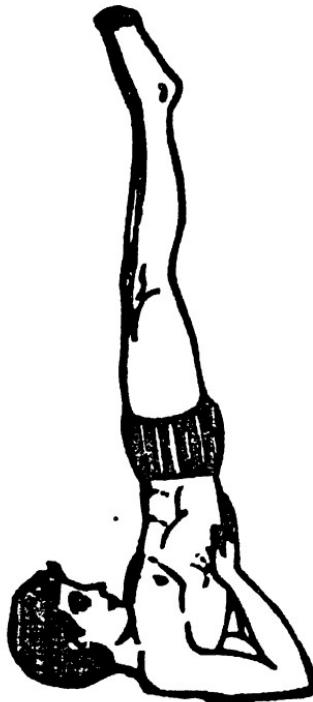


Fig. 4.3: Sarvargasana

Technique

Lie down on your back on a folded blanket. Then slowly raise the legs up, lifting the trunk and hips. Let the elbow rest on the floor. The chin should be firmly pressed against the chest. In this pose, the hind part of the neck should touch the floor and trunk and legs

should remain straight. Remain in this pose for a couple of minutes

Concentrate on Thyroid gland which is at the root of the neck. Return to the original position and relax. This Asana has number of benefits. It rejuvenates all the organs of the body, strengthens the spine, stimulates endocrine glands. Tones up the nervous system and improves the circulation.

4. Hal Asana (The Plough Pose)

In Sanskrit Hala means plough. This Asana must be done after Sarvangasana. Different theories for the promotion, of health have been evolved from this Asana by the Yoga therapeutists.

Technique

Spread a folded blanket on the floor and lie down flat on the back with arms straight, raise them slowly above the head. Only stomach and Abdominal muscles



Fig. 4.4: Halasana

should be used to raise the legs. Bend the trunk upward hips first and slowly lower the legs over the head till the toes touch the floor. Keep the legs straight. Now interlock the fingers and stretch the arms. The legs and hands are stretched in opposite direction. Breathe slowly

without any strain. Remain in this pose for a couple of minutes, return to the original position and relax.

Halasana improves the functioning of Endocrine glands, Pancreas, Kidney, liver. It makes the spine supple and strong. It cures diabetes, rheumatism, limbago, insomnia and constipation. It also stimulates thyroid and parathyroid glands.

5. Bhujangasana (The Cobra Pose)

Bhujang in Sanskrit means a "Cobra". In this Asana, inhale breath while raising head up and retain breath as long as head and chest are up then Exhale breath when the head and chest are lowered down. People suffering from Hernia, Peptic Ulcers, Intestinal tuberculosis should not do this Asana.

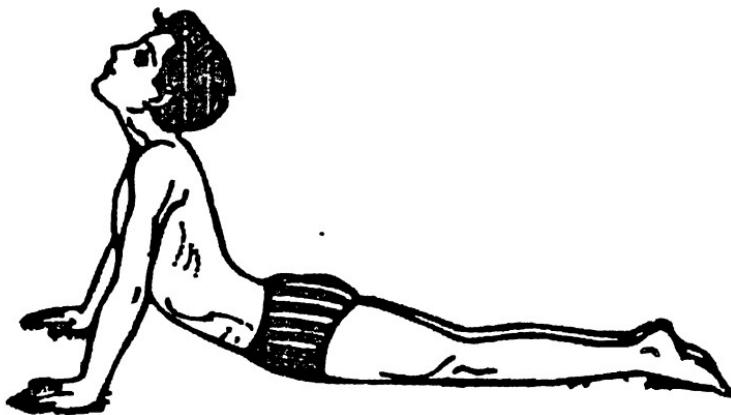


Fig. 4.5· Bhujangasana

Technique

Lie flat on the stomach with legs straight and the feet Extended. Place the hands, Palms down under the shoulders, slowly raise the body above the novel until the arms are straight but the stomach and the legs must

touch the floor. Bend the head back, gazing diagonally upwards, remain in this pose for a couple of seconds, breathe slowly and normally.

Bhujangasan is one of the highly efficacious Asanas for the spine and abdomen. It removes unwanted flesh from the hips and abdominal region, makes the spine supple and flexible, tones up the nervous system, liver and kidneys. It cures jaundice, piles, Diabetes. This Asan strengthens the adrenal gland.

6. Paschimottanasana (Stretching the Back and Hip Pose)

This Asan stretches the entire rare portion of the body. Jerky movements are to be avoided in this Asan. This Asan checks the ageing process. It is very beneficial for Diabetics. It tones up endocrine, Thyroid Pancreas glands.

Technique

Lie flat on the folded blanket and stretch the arms over the head and trunk, exhale and bend them over



Fig. 4.6: Pashchimottanasana

the legs without raising the knees. Pull the toe with the arms and lower the elbows. The bending should be done very slowly. Remain in this pose for a couple of seconds

and increase the time gradually. Return to the original position and relax.

This Asan cures chromic constipation, duspepsia and Diabetes, it also tones up thyroid and parathyroid glands like Sirsasana and Sarvangasana, Paschimottanasana is the destroyer of all diseases and bestower of healthy life.

7. Dhanur Asan (The Archer's Pose)

This Asan is named after the archer. In this Asan breath is inhaled while stretching up head and chest, breath is retained as long as head and chest are up. Then breath is exhaled when the head and chest are moved down.

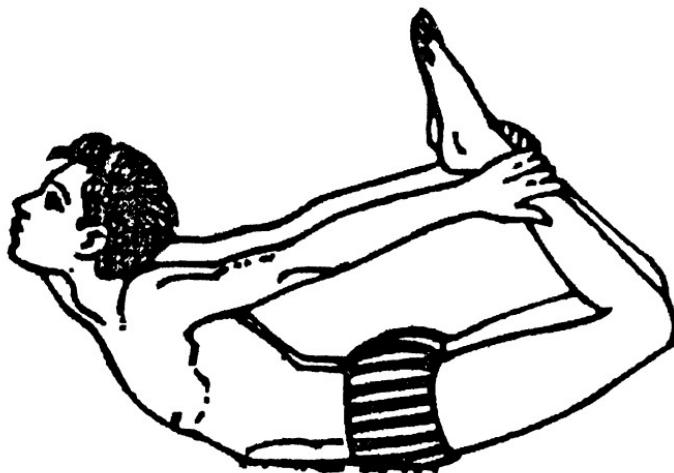


Fig. 4.7: Dhanurasana

Technique

On a folded blanket sit and stretch the legs forward place the right foot on the right thigh and grasp the right

toe with right hand. Hold the left big toe with left hand. Keep the head, neck and spine straight. Repeat the process at least five times. Come to the original position and relax.

This Asan tones the muscles of the legs, arms, thighs and abdomen and makes the spine supple and flexible. It also strengthens biceps and ankles and tones up Endocrine glands, thyroid and pancreas.

8. Garud Asan (The Eagle Pose)

In Sanskrit Garud means an eagle. This Asan is difficult for beginners, however with regular practice and patience they can do it well. In this Asan breath is to be retained as long as the practitioner is in this pose.



Fig. 4.8: Garudasana

Technique

On a folded blanket stand upright, bend the left knee slightly and twist the right leg over the left leg so that right instep is touched behind the left calf. The arms should remain cressed in front of the chest so that the left elbow joint and the left twist is kept above the right twist in front of the face. Remain in this pose for a couple of minutes and breathe slowly, then repeat the pose balancing on the right leg and reversing the arms and the leg positions. Gaze at a white spot or point. Come to the original position and relax.

This Asan stretches and strengthens the muscles, tones the nerves, promotes suppleness in the legs, shoulders, digestion, and circulation. It reduces the fat from hips and the abdominal region. It also strengthens Thyroid, Pancreas and Adrenal glands.

9. Salab Asan (The Locust Pose)

In Sanskrit Salabha means locust. In Salabha Asan, the process is reverse of Bhujangasana, the upper body touches the floor. In this Asan, inhale breath when the head is raised up., retain breath as long as the head is up and Exhale breath when the head is moved down.

Technique

On a folded blanket on the floor, lie prone on the stomach and chest. The fore head and chin must touch the floor and keep arms alongside the body and legs Extended together. Take a deep breath. Clench the fists tightly and raise the legs as high as possible. Without bending them. Exhale breath and bring the legs slowly to the floor. Remain in this pose for a couple of seconds., and return to the original position and relax.

This Asan strengthens the muscles of lower back, buttocks, head and lungs. It removes fatty tissues from

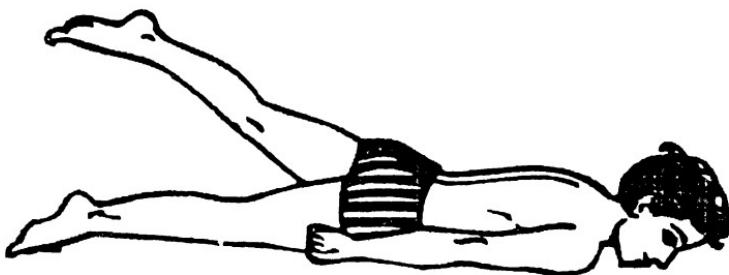


Fig. 4.9: Salabasan

the waistline, stimulates the abdominal viscera, tones up the liver, Pancreas, adrenal glands and kidneys. It is beneficial for persons suffering from Diabetes, lumbago, and insomnia.

10. Shavasan (The Corpse Pose)

This Asan is very important, popular and highly powerful Asan. In the classic texts, this pose is called Shavasana and in "Gheranda Samhita" It is named as Mrityasana. "Shav" and "Mritya" means corpse or dead body. This Asan is also called "Total Relaxation Pose" by some western yogis. This Asan is very simple but difficult to practise. Today, when the stress and strain of life are increasing rapidly, Shavasna is the only Asan that provides complete relaxation (Mental and Physical).

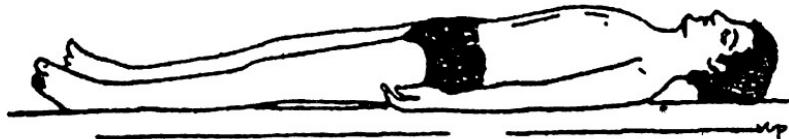


Fig. 4.10: Shavasana

Technique

On a soft carpet or folded rug lie full length on back with arms away from the body and palms facing upward

and feet slightly apart. Close the eyes and mouth and withdraw the consciousness by stages beginning with the feet, the ankles, the knees, the abdomen, the chest, the neck and the face. Finally keep the mind free. Start breathing slowly, rhythmically. The practitioner should feel that his body is motionless like a body. In this Asan all tissues, nerves and muscles are to be relaxed. Then retain breath for a couple of seconds, and again have longer breaths. Rhythmic and deep breathing are absolutely necessary for concentration which give complete relaxation.

Shavasana is an Excellent Asan for complete physical, mental and spiritual relaxation. Tension Irregular or faulty breathing can cause many diseases. This Asan stimulates the entire nervous system. It also eliminates toxins accumulated in the body, recharges organism with Prana, restores energy and cures high blood pressure, depression. This Asan when performed correctly gives relaxation to body and mind. This Asan must be done at the end.

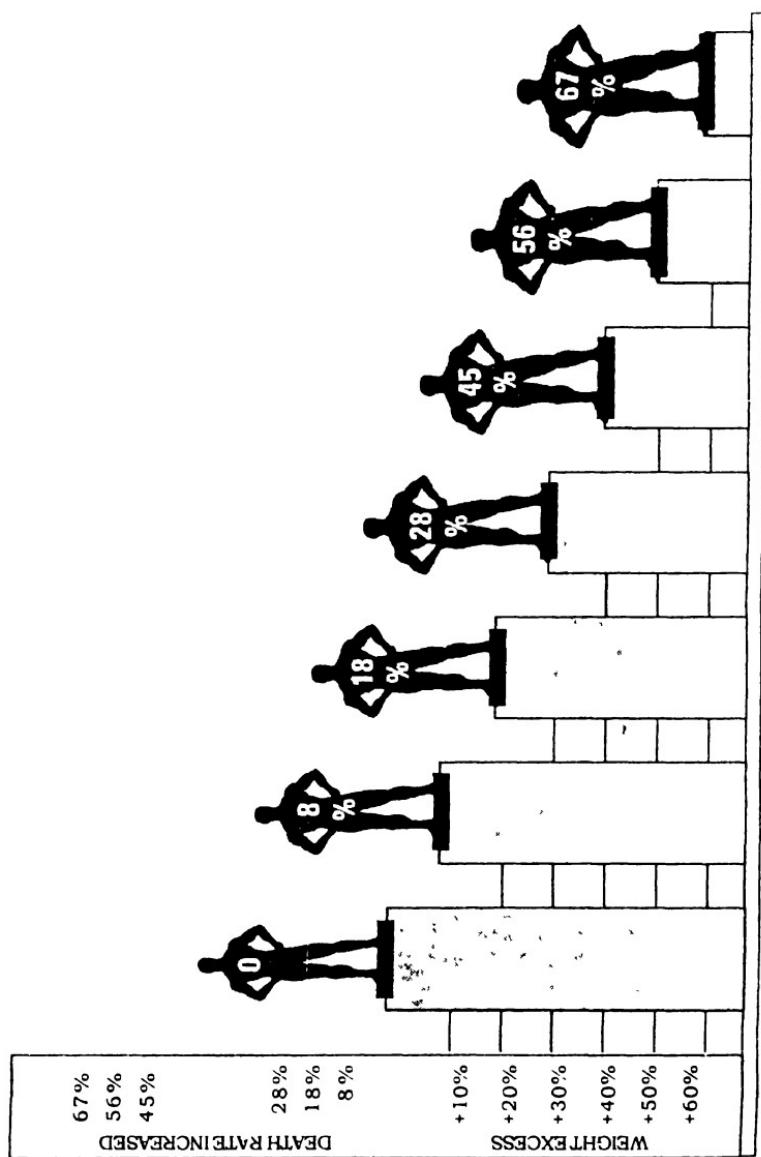


Fig. 4.11: Hazards of Overweight

5

Pranayama for Diabetes

More than one thousand years ago, a great Yogi called Gorakhshnath traversed the length and breath of Bharat, Giving his Yogic message to the people. What did he say? "Nishti Pranayamis! Learn how to breathe and save yourself from all mental, emotional and physical pains". He called the people Nishi Pranayamis or shallow breathers! He knew that breath was life and that most people were "living dead" because they were too ignorant lazy to even breathe properly. Today the problem is worse, as modern man does not even have the healthy Exercise of daily chores to force him to breathe deeply. Further more all the air he is breathing is polluted, more like poisonous gas than air/ our body mind and emotions need prana to sustain themselves and we obtain our prana primarily through deep breathing. Wake up and live ! Learn the art of Pranayama and live a life of purpose and vitality.

It is an established fact that diseases, disorders and ailments are the result of faulty ways of living, bad habits, lack of proper knowledge of things and improper diet. Since Yoga is a subjective science and art. The patient has to make efforts himself. The yoga Expert shows only the path. The Yogic treatment comprises three steps 1, Yoga Principles which concern the life of an individual.

Prana is altogether different from breathing. It is inside the blood and the bones. Without Prana-the breath of

life, the body dies and decays. The great authorities on Yoga assert that "Prana" has three stages of relationship, mind soul and supreme soul. In Pranayama the maximum quantity of oxygen is inhaled. Pranayama is a scientific mental and physical Exercise particularly of the diaphragm, the abdominal muscles, the heart, liver the nervous and endocrine systems, spinal cord etc. The three stages of Pranayama are Puraka (Inhalation) Kumbhaka (retention) and Rechka (Exhalation). A person who practices Pranayama regularly always enjoys normal health sparkling eyes, sharp memory and concentration of mind.

The following Pranayama Exercises If performed regularly and Correctly will be Extremely beneficial to persons suffering from Diabetes.

a. Suryabheda: Sit erect in Sidhasana posture, keep the chest, neck and head straight, closing the eyes and mouth inhale through the right nostril, retain the breath and then Exhale through the left nostril slowly. In this exercise the period of retention of breath is to be increased gradually.

b. Ujjayi: Again sit in sidhasana posture, Inhale through both the nostril in a slow rhythmic manner till the inspired breath fills the space between the throat and the stomach. Retain the breath as long as you can conveniently and then exhale slowly through the left nostril. The important feature of this exercise is that a mild and peculiar sound is heard due to the partial closure of the glottis.

c. Sitkari: Sitting in Sukhasana or sidhasana posture, fold the tongue in such a manner the tip of the tongue touches the upper plate., draw the air through the mouth producing a sound of "See, See". Retain the breath as long as you can without the feeling of suffocation and exhale through both the nostrils, these three processes

form one round. This Exercise cures many diseases of the blood.

d. Sitali: Sitting in sidhasana or sukhasana posture contract the lips and throw out the tongue. Fold the tongue like a tube and draw in the air through it making a hissing sound. Fill the lungs and stomach slowly with the air drawn in, and retain the same as long as you can. Practise it from 10 to 15 times daily. The Sitali Pranayama purifies blood and the Practitioner acquires great tenacity of life.

e. Bhastrika: Bhastrika implies bellows, quick succession of powerful Expulsion of breath is the Chief Characteristic of this Pranayama. Sit in Sukhasana or Sidhasana posture. Close the mouth. Inhale and Exhale quickly 8 to 12 times in rapid succession like the bellows of the village ironsmith. While practising this pranayama, a hissing sound is heard.

By doing pranayama Exercises one can develop a harmonious functioning of the different systems of body. Pranayama helps in drawing largest quantities of oxygen into our system. Moreover, pranayama can give self control, peace of mind to the practitioner. Nature has blessed us with certain amount of healing power, though its quantity varies from person to person. A child has an abundance of life force whereas a grown up person who has wasted his life force through dissipation, has minimum healing power left in his body. Pranayama helps in the preservation of this healing power. The more life force is stored, the stronger one becomes physically and mentally.

6

Yogic Principles

“With the sword of the understanding of thyself thou shalt rend asunder in thy heart every doubt arising from ignorance, and shall achieve thy permanence in “Yoga”.

————— Bhagavad Gita.

Life is man's priceless treasure and next in order of value comes health. Without normal health life is dull, dreary and dross. If the body is not in good health, one cannot enjoy success and prosperity. A man may possess power and pelf, all the comforts and luxuries of life but if he does not enjoy good health, all things have no charm for him. Health is the fundamental condition of happiness and contentment. Health happiness and peace of mind are those assets that cannot be purchased. To a sick person body becomes a burden some prison, Healthy persons with courage, stamina, Vigour and vitality can be successful in the battle of life.

Yogic principles have universal appeal. They cross all the barriers of distance, Cast, colour and creed. The grounds for the training of Yogic principles must be essentially scientific for it is well known that hatred, anger, greed jealousy and all other negative emotions have a detrimental effect on health by affecting the blood and nerves. In India there is no dearth of Yoga schools, ashrams and kendras. But they are mostly regarded as health Institutes or Viyayam Kendras rather than centres

of philosophic study. Such publicity seeking schools, Institutes and ashrams do not stand on a very high level for their lack of integrating the physical, spiritual and scientific aspects of the subject. In Hatha Yoga, yogic principles occupy most important place. Yogic principles form the crux of Yoga. Hatha Yoga is the only ideal system for attaining harmonious development of body, mind and soul through the eight limbs of Yoga.

1. Yama: Moral conduct truthfulness, non-covetousness.
2. Niyama: (Observances) of cleanliness, contentment, self-discipline, study and self-surrender to God.
3. Asanas: Right Postures.
4. Pranayama: (Breath Control) Control of Prana by regulating breathing processes of Inspiration, Expiration and, retention of breath.
5. Dharna: (Concentration) Fixing the mind on one subject at a place or point.
6. Pratyahar: (Sense withdrawal) Turning the senses inward and withdrawing them from External objects.
7. Dhyana: (Contemplation) or meditation. Keeping the mind fixed exclusively on one subject or Idea for sometime without any Interruption.
8. Samadhi: (Self-realization) Super-conscious experience in trance where enlightenment or union with self takes place. The first five of these principles refer to "Bhairanga (External) and the remaining three "Antaranga" (Internal).

Yogic principles suggest a sane pious, and normal manner of living. These principles keep close to nature

and encourage natural methods in preference to artificial habits of living. Man is a unique creature of God. He has many levels of existence. Besides having a physical body, he is blessed with a self that is the real centre of his whole being. The Taittriya upanishad has rightly spoken of food self, prana self, self of knowledge and finally self of bliss, Every self is a kind of concentration of consciousness and this consciousness is divine at its core. Yogic principles can play a vital role in this remarkable discovery of the self. Consciousness is the primary and all pervading fact in man. It is self-awareness that gives a push forward to all our limbs and faculties. The growth in Evolution is measured by the development in consciousness. The yogic principles are helpful in speeding up the development of consciousness. The ultimate aim of human life is to attain perfection and state of supreme blessedness. Who does not want to overcome sorrow and suffering? Who does not want to reach a deathless state? Yogic principles come to the help of man. Yoga in totality is not utopia. It is not beyond the reach of man. It opens for man a real of beatitude, liberation of sorrow and disease. Mind is always in a state of activity. Tranquillity is unknown to it. Just as it is the nature of fire to burn, of water to flow, of the wind to blow, so it is the nature of the mind to be ever-restless to control the mind but this task is not an impossible one. There is nothing better than Yogic principles to help man to inculcate and imbibe the spirit of peace and happiness, yogic principles constitute means by which man can transcend the limitations of caste, creed, colour and nationality and become the cosmic man. The mind of a yogi must be pure because purity is the pre-requisite to perfection. Only a man of purity can strive the path of Yoga steadily.

Yogic principles are panacea for stress disorders. They work wonderfully where innumerable tranquillising agents have failed. Yogic principles not only help in

preventing and curing diseases but also improve the resistance of body at the psycho-philosophical state. Scientific researches have shown that yogic principles can delay ageing and degenerating process with the result that a person may remain active and energetic for a longer period of life.

7

Diet Therapy

Life cannot sustain itself without food. The importance of diet for the diabetics is Universally accepted. But there are divergent opinions concerning the endocrines in Carbo-hydrate metabolism and the possible effects of hyperglycemia on the incidence of arteriosclerosis. Some physicians advocate "free" diets and permit their patients to eat whatever they wish. But majority of physicians and Yogatherapists do not subscribe to "free" diets. Their objectives of dietary treatment are 1, to provide adequate nutrition for a sense of well being and a life of usefulness, 2, to correct the faulty metabolism of sugar and fat by eliminating sugar from the Urine, reducing the blood sugar to normal and maintaining a normal blood lipide concentration. 3, to improve the ability of the body to utilise glucose and, 4, to avoid complications such as Ketosis, arteriosclerosis, and infections. More than 60 percent of all diabetics require dietary adjustment to the limited supply of Insulin produced by the body. Almost all children and underweight adults require insulin continuously so that an adequate diet can be metabolized.

Energy

It is no longer believed necessary to maintain under nutrition. Loss of weight must be avoided, and the patient should not lose his sense of well being. If the patient is greatly undernourished efforts should be made to increase his weight. On the other hand, obesity is by all means to be avoided. Obese individuals should be placed on a low calorie diet until the required weight for height and age is attained. The caloric allowance is essentially the same as that for normal individuals of the same activity, size, and sex.

Protein

The higher level of protein gives greater satiety value to the diet. Some what higher protein levels are in order when there has been Extensive loss of weight and associated hypoproteinemia or when liver disease, retinitis, or other conditions are present. Proteins are essential for growth, and development.

Carbohydrate and Fat

Diabetics can take at least one third of the carbohydrate of the normal diet. Usually he can take one half of the normal level of carbohydrate and sometimes two thirds. Majority of the physicians believe that the carbohydrate should not be less than 150 gm. Fourty to sixty percent of the non protein calories may be derived from carbohydrate, while fat supplies the remainder of the diet. Many physicians arbitrarily set the fat level at 90 to 120 gm perday. Vitamins and minerals. These are protective factors which are essential in small quantities. They are found in green leafy vegetables, fresh fruits, milk and dairy products. Daily in take of these foods can provide enough vitamins and minerals. The objectives of diet management in diabetes are :-

1. Reduce blood glucose levels and urinary sugar.
2. Maintain normal body weight.
3. Provide all required nutrients.
4. Improve the over all style of life.

For diabetic patients, treatment depends mainly on proper diet management. If diet restrictions are properly adhered to, the blood sugar level can be maintained. The diet restrictions means "Eating the right kind of food in the right quantity at the right time". The diet of diabetics need not be a complete deviation from the normal diet. But it should be such as to match the Insulin and drug in take so as to keep the blood sugar levels under control. As believed earlier the diabetics need not restrict the carbohydrate in take but to alter the type of carbohydrates in their diet. Complex carbohydrates present in cereals and pulses are better than the carbohydrates present in Jam, Jellies, Sugar and sweets.

It has been recently found that different foods that may contain equal amounts of carbohydrate effect the blood sugar levels differently. It is in this context that the concept of glycemic index has been introduced. Glycemic index is the Index of the Extent of increase in blood sugar levels after taking a particular food in comparison to an equivalent amount of glucose. Thus the foods which have a low glycemic index do not increase the blood sugar level as much as the same quantity of another food which has a high glycemic index. Fruits contain fructose sugar which raises the blood glucose level to a lesser Extent as compared to the carbohydrate rich foods like potatoes. Several factors such as cooking, roasting, boiling, frying, fat and fibre content effect the glycemic Index of different foods. Certain foods such as Ice Creams and whole milk have a low glycemic Index but are not good for diabetics because of their high calorie content and can cause obesity. Another component called dietary fibre should be included in the diets of diabetics. Soluble dietary fibre is present in vegetables, fruits, legumes, and also "Isabagol". It is very effective in controlling glucose levels and also blood lipids as compared to insoluble fibre present in the peels of vegetables and fruits. Moreover, high fibre diets are also beneficial in reducing weight and preventing cardiovascular diseases.

It is better for diabetics to avoid alcohol. Alcohol reduces a blood glucose levels below certain critical levels and therefore result in hypoglycemia. Alcohol provides 7 calories per gm. and increases appetite and the patient cannot show adherence to the restricted diet. It can therefore lead to obesity.

The diabetic diet is individualized for each patient. The physician keeps the following factors in mind while prescribing prescription.

1. The history of both the patient and his family.
2. Sex, age, weight, height and activity of the patient.
3. Type of Diabetes-----mild or severe.
4. Type of Insulin, amount and when administered.
5. Nutritional requirements.

Our diets mainly consist of carbohydrates. Generally 60-70 percent of the total caloric value of diet comes from carbohydrates. It is essential that carbohydrate be properly distributed throughout the day whenever no Insulin is being given, the carbohydrate is divided into three equal parts. The blood sugar may be higher in the morning in which case a smaller amount of carbohydrate may be given for breakfast and larger amounts at noon and night. When protamine zinc Insulin is given, the carbohydrate is usually divided into four and sometimes six meals instead of three. A light meal before retiring is advisable to avoid Insulin reactions during the night. For Example, 20 to 40 gm of Carbohydrate may be given at the bed time meal, one fifth for breakfast, two fifth for lunch and two fifth for dinner, There are many pre-requisite factors which must be kept in mind while planning the diet for diabetics.

1. The diet must be planned with proper consideration of the patients economic status the local market conditions, including availability and cost of food, national, religious and social customs and personal Idiosyncrasies. The diet should be planned with the patient so that it can be adjusted to his pattern of living.
2. The foods selected must satisfy the demands of the appetite. Many diabetics break diet because the food ordered does not give a feeling of satiety even though the diet is adequate in every respect. The fruits and Vegetables of low-carbo-hydrate value which are those to fill prescription will usually prove to be valuable source of the vitamins, minerals and fibre which are necessary in the normal diet.
3. The foods containing carbohydrates should be selected first. These include milk, Vegetables, fruit and bread Meat or Exchanges for meat such as eggs and cheese are then added.
4. Fats are included last, and a final adjustment is made on the diet so that all totals are within the allowable range.

For the ultimate success of the treatment of diabetes, the co-operation of the patient is desirable. The better informed the patient is with regard to the nature of his

diseases, the greater are the normal span of life.

Hypoglycemia implies a blood sugar concentration below the normal level. Generally in this case, symptoms do not appear, until the blood sugar is below 70 mg per 100 cc. The diabetic hypoglycemia or insulin shock, may be caused by

1. An overdose of Insulin, 2. a decrease in available glucose because of omission of food or loss of food by vomiting or diarrhoea. The patient first becomes aware of uneasiness, nervousness, weakness, trembling, thirst and excessive hunger. The pulse becomes rapid and pallor, sweating and fainting sensations appear. In such cases orange juice, sugar, candy, syrup, honey or any Carbohydrate may be given when there is insulin shock. For such emergencies, every patient should carry some sugar or hard candy with him.

In Pregnancy, Glycosuria occurs frequently., and it is necessary to distinguish it from the true Glycosuria of diabetes. The diabetic woman who is pregnant requires an increase in her diet during the last half of pregnancy and adjustment of Insulin dosage. The nutritive requirements are similar to those of nondiabetic woman who is pregnant. Diabetes increases the hazards of pregnancy because of dangers of glycogen depletion, hypoglycemia, acidosis and infection. The diabetic mother, Generally is not able to produce enough milk for her baby.

The diabetic patients have to be very careful about the diet. They should avoid taking sugar, sweets, puddings, Chocolate, Jam Jellies, Ice Cream, Cakes, Pasteries, Cookies. They should also avoid taking butter, Cheese, fried or roasted foods, red meat, dried fruits, nuts, mango, Banana, Grapes, Cold drinks, fruit juices, pickles in oil, alcohol, noodles etc. The diabetic should not remain hungry for a long time this may cause hypoglycemia. He should not fast or miss a meal as it may also lead to hypoglycemia. Moreover, he should drink plenty of water 12-15 glasses in Summer and 6-8 glasses in winter. He should do Yogasana regularly and punctually. A diabetic should always carry Sweet or

glucose biscuits If ever there is dizziness or sweating. He should also be very careful about cuts or cracks particularly in the feet.

Regarding the management of Diabetes melitus, the success or failure depends upon the patients themselves. Adherence to restricted diet demands self-discipline and sense of purpose on the part of the patients. The doctor can only advise. There are three methods of treatment namely. Diet alone, diet and hypoglycemic drugs, and diet and Insulin. In each treatment the patient must show strict utterance to life long dietary regimen. More than 60% of the diabetic patients can be controlled by diet alone.

The first step in preparing any dietary regimen is to chalk out a time table of the patients day including a description of the usual meals. This step is often ignored by the patients. The diet must be nutritionally adequate for the patients needs and it must be in accordance with the age, sex, weight and height of the patient. Basically, there are two types of diet 1, measured, in which the amount of food to be eaten at each time of the day is specified, and 2, Unmeasured diet in which the patient is supplied with a list of foods grouped in three categories, foods with a high sucrose content which are to be avoided altogether, foods containing Carbohydrate in the form of starch which are to be eaten in moderation only and non-Carbohydrate foods which may be eaten as desired.

Measured diets :- In these diets the portions of food may be measured by weighing with scales measured diets are required for two groups of patients to those who require Insulin and B, Those who are overweight and require a strict reducing regimen.

All patients must have an elementary knowledge of diabetes. They must know that many drugs have adverse effects on the diabetic state. They should consult and seek the advice of the doctor when they feel any deterioration in health or symptom associated with diabetes.

PART-III

BACKACHES

1

Spinal Cord—The Tree of Life

A spinal cord is not just a spinal cord, it is our tree of life. The branches and leaves are the ramifications of the nervous system which spread out right and left from the spinal cord to the most distant parts of the body. A vertebra column runs from neck to waist through the backbone. It has 26 parts which are connected with each other like a chain. Our health is closely linked with the health of the vertebra column. Each vertebral body is separated from the vertebrae above and below it by a joint which allows movements. In the chest region the vertebra are also connected to the ribs by means of joints. It is as though a column of bricks were separated from each other by rubber pads instead of mortar and were laced together by strong elastic throngs allowing the column to wave, as it were in the breeze. The pattern and purpose of backbone is the same in all species, to be supple and mobile and allow a full range of movements and to support the head on the top of the column and arms or legs at shoulder and pelvic levels. The spinal column has to be highly mobile yet supportive and has to contain and protect an essential part of the nervous system of the body. There are two types of movements which can be controlled by us at will such as walking, sleeping, chewing food etc. They are called voluntary movements second type of our body movements are not under our control. Our heart keeps on beating without any effort.

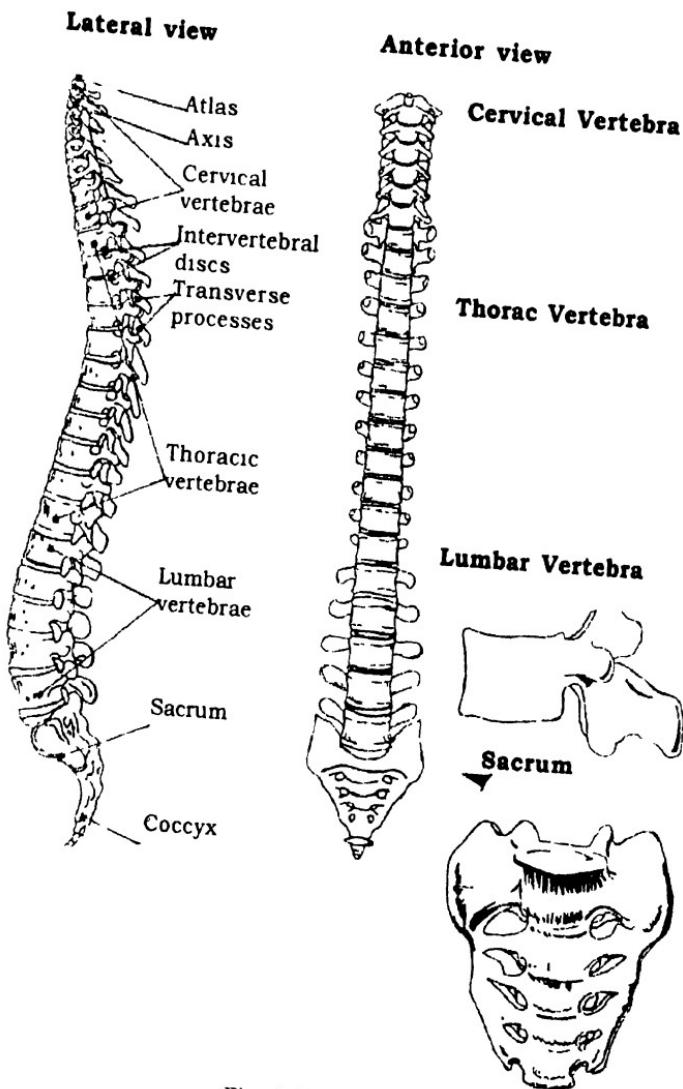


Fig. 1.1: The Spine

on our part. Our intestines also have movements due to which our food keeps on sliding down. Such movements cannot be controlled at will and are called involuntary movements.

The vertebral or spinal column is a flexible structure formed by a number of bones called vertebrae. Between each two bones, the column is supplemented by pads of fibro-cartilage. The adult column measures 60-70 cm in length. There are 33 vertebral bones, 24 of these are separate bones and the remaining 9 vertebrae are fused to form 2 bones. The vertebrae are grouped and named according to the region they occupy. Seven cervical region. Vertebrae form the neck or cervical region. Twelve thoracic vertebrae form the back of the thorax or chest. Five lumbar vertebrae form the lumbar region or loins. Five sacral vertebrae form the scrum. Four coccygeal vertebrae form the coccyx or tail. The vertebrae in the upper region remain separate or distinct throughout life, and are called movable vertebrae. Those in the two lower regions, and scrum and coccyx are united in the adult to form two bones, the fixed vertebrae, with the exception of the first two cervical vertebrae, all the movable vertebra have similar characteristic., a typical vertebra consists of two parts, an anterior part called body and a posterior part called the neural arch.

The cervical vertebrae are the smallest of the bones. The cervical vertebrae possess the following character in common. The bodies are small and oblong in shape broader from side to side. The neural arch is large. The spinous processes are divided terminally. The transverse processes are perforated by foramina for the passage of the vertebral arteries. The seventh cervical vertebra is the first vertebra with an undivided spinous process. This process has a tubercle at its tip. It forms a distinct projection in the neck and can be seen at the lower part of the back of the neck. Because of this characteristic the bone is called the vertebra prominens. The Thoracic vertebrae are larger than the cervical and they increase in size as they extend downwards. A typical thoracic vertebra presents the following characteristics. The body is heart shaped with facets on each side for attachment

of the ribs, the spinous process is long and is directed downwards, and the transverse processes are thick and strong and carry articular facets for the ribs. The lumbar vertebrae are the largest. The body is very large compared with the bodies of the other vertebrae and is kidney shaped. The spinous process is broad and hat-ket-shaped. The transverse processes are long and slender. The fifth lumbar vertebra articulates with the sacrum at the lumbo-sacral joint.

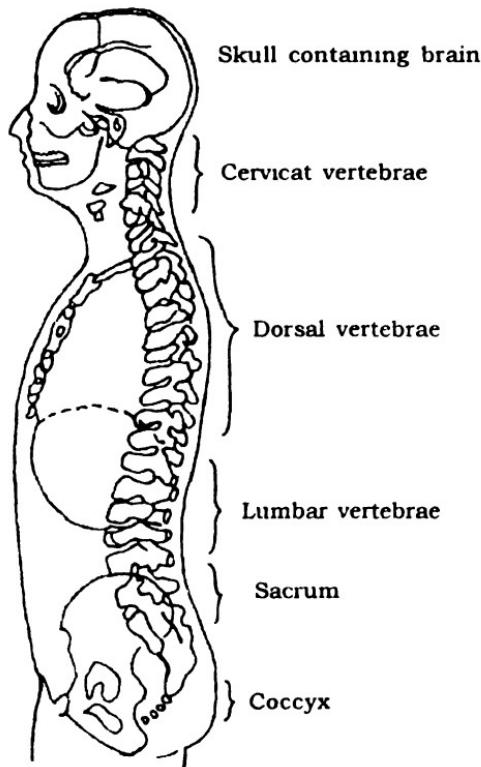


Fig. 1.2

The sacrum is a triangular bone situated at the lower part of the vertebral column, wedged in between the two innominate bones, and forming the back of pelvic cavity. The base of the sacrum lies above and articulates with

the fifth lumbar vertebra, forming a typical intervertebral joint. The anterior edge at the base of the sacrum forms the sacral promontory. The sacral canal lies below the spinal canal and is a continuation of it. The walls of the sacral canal are performed for the passage of the sacral nerves. The anterior surface of the sacrum is concave and shows four transverse ridges, which mark the point of union of the five sacral vertebrae. At the extremities of these ridges, on each side, are apertures for the passage of nerves. These are called the sacral foramina. The coccyx is composed of four or five rudimentary vertebrae used to form one bone. It articulates above with the sacrum. The curves of the vertebral column :—

Looking from the side, the vertebral column presents four antero-posterior curves, the cervical curve in the neck which is convex forwards, the thoracic curve, convex backwards the lumbar curve, convex backwards. The two posteriorly convex curves, thracic and pelvic are called primary. The two anteriorly convex curves are secondary—the cervical curve is developed when an infant raises head to look above and around his surroundings, and the lumbar curve forms when the infant crawls and tries to stand and walk and keep himself erect.

The joints of the vertebral arches :—

These are cartilaginous joints formed by pads of fibro-cartilage placed between each two vertebrae, strengthened by ligaments running in front and behind the vertebral bodies throughout the entire length of the column. Masses of muscle on each side materially help in the stability of the spine.

The intervertebral discs are thick pads of fibro cartilage between the bodies of the movable vertebrae. The joints formed between the discs and the vertebrae are only slightly movable joints of the symphysis variety but their

number gives considerable flexibility to the column as a whole. The movements possible are flexion, forward

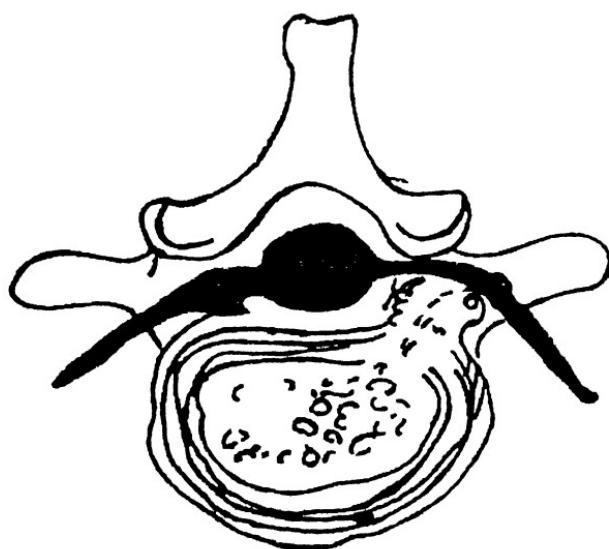


Fig. 1.3: Ruptured disc pressing the nerve root—
as it would look from the top

bending, extension, backward bending lateral bending to each side and rotation to right and left. The functions of the vertebral column are of paramount importance for the healthy life of man. The vertebral column acts as the firm, stable and balanced support to the body. Yet at the same time, by means of its intervertebral discs of cartilage which act as buffers and its curves. Which give flexibility and enable it to bend without breaking these discs serve to absorb the shock when moving the weight of the body as in running and jumping position and thus the brain and spinal cord are protected from shocks, jerks and jolts. The vertebral column also supports the weight of the body and affords surfaces for the attachment of muscles and forms a strong posterior boundary for the cavities of the trunk and gives attachment to the ribs.

The pelvic Girdle :—In the machinery and system of the spinal cord, the pelvic girdle is the means of connection between the trunk and the lower extremities. This girdle is formed by part of the axial skeleton. The pelvis is divided into the true pelvis or pelvic basin which lies below the brain and the false pelvis formed by the iliac bones extending above the brain. The inlet of the true pelvis is the brim, formed by the promontory of the sacrum. The sacro iliac joint is an articulation between the articular surfaces of the iliam and the sides of the sacrum. Only slight movement is possible at this joint as very strong ligaments unite the articulating surfaces, limiting movements in all directions.

Human back is a wonderful example of biological technology. Our postures and movements vary from individual to individual. Our movements are influenced by our body built, habits, occupations and our hobbies. The postures we adopt, the movements we make also depend on the condition to our joints muscles, nerves, and ligaments. To make easy movements and to adopt correct postures, human back is provided with thick and powerful muscles both in front and behind the spinal column. In this complicated machinery of spinal cord, any minute defect in ligaments, muscles, nerves or joints can cause pain and serious ailment. It is through Yogasanas, pranayama exercises that the muscles can be toned up and the ligaments and nerves can be strengthened.

2

Causes of Backache

Often both the doctors and patients feel confused about the real cause of backpain. We attribute every backache to a degeneration (osteoarthritis) of the spine or a "Slipped" Intervertebral disc. The human back still remains an engima. Because human back is most complicated part of the human body with dozens of ligaments, bones, muscles, nerves blood vessels, fitted together. Moreover, the structures of the back are invisible to human eye. Nowadays, a number of organs namely the stomach, the bladder, the rectum, the abdominal cavity can be inspected with the help of instruments. But there is no way by which a doctor can look into your back and say what precisely is going on there. Even X-rays are not so helpful in pin-pointing the cause of backache. The doctors are capable of managing a backache than determining its cause. To maintain the erect posture, the human back is provided with thick and powerful muscles both in front and behjnd the spinal column. The ligaments and the muscles between the vertebrae act very much like the stays of the mast of a ship. As the stays of the ship are pulled to change the direction of the mast similarly alternate contraction and relaxation of these muscles maintain the posture and curve of the spine. In any particular position of the

human back which muscles of the spine will contract or relax is an automatic mechanism which is controlled by the brain through the tone of the muscles. Normally the movements of the back are :—

- a. Forward bending or flexion. A healthy individual should be able to touch the toes with hands while the knees are straight.
- b. Backward bending or extension. Normally 15 to 20 degrees of backward bending is convenient.
- c. Side bending. Normally 20 to 25 degrees of side bending is convenient.
- d. Rotation. While the patient is sitting on a stool with the feet firmly on the ground, he/she should be able to turn about 45 degrees on either side conveniently.

Most often backache is the result of the constant misuse of the spine. Certain occupations in which the person has to bend forward for a long time produces backache. A housewife who has to squat and clean the floor, has a sitting or standing arrangements in kitchen for cooking, cleaning the utensils and washing the clothes will have more chances of backache.

One day to day activity is common in every one's life. That is to pick up an object from the ground, or lifting a utensil or bucket of water from the ground, or a mother picking up a child or a worker in a factory lifting a packet., a coolie lifting a luggage, or a gardener goading the plants, or a person tying the laces of his shoes. In all such situations, the back should not be bent with the knee keep straight, rather one should squat with the knees bent and the back keep straight and then the

object be firmly held near the body and the weight supported on the thighs.

Some other common activities are done by all the individuals are when they push, pull or climb the stairs. It is due to ignorance of the correct posture that they become victims of backache. While pushing an object (say grass remover) one should not bend the back at hip joints and apply force with the arms held straight. While performing such an act one should keep the back and hips straight and bend the arm at the elbows. Similarly while climbing up a stair case or the mountains care should be taken. The journey can be broken in smaller segments to give rest. If a weight is to be carried on the back rather than in one hand or the other.

Those persons namely business executives, judges, students, clerks who have to sit on a chair for long hours should make sure that they are using comfortable chairs and sitting in right postures. The height of the chair should be such that while sitting on it, the feet are placed flat on the ground. The knees are at the same or a slightly higher level than the hips and back is touching the back support of the chair. If the chair is high then a foot board should be placed under the feet.

Another common activity which all of us experience is getting out of bed. Children like to get up after turning on their side bend the knees and the hips. Adults usually get up by first lifting the head and then individuals who are prone to backache should first turn on the side then lower the feet on the ground and then sit up taking support of the hands. Sudden movements and jerks during the process of getting up can cause muscular pull and thus backache.

Some people are in the habit of reading in bed or while lying down or even in sitting position on practically every one indulges in wrong posture while lying or sitting. It is much convenient if the small pillow is used to support the lower back. In certain activities when one has to stand for long hours at a stretch i.e., house wives in kitchen workmen operating a lathe-machine, architects, nurses, surgeons etc. In such situations one can have backache, and pain in thighs and legs. In such situations, the person should keep moving his feet, bend the knees from time to time and stand sometimes on toes and sometimes on the heels. It is better to keep footboard and keep one or the other foot alternately. Sometimes some people while performing some action on the table, bend their back. The person should stand near the table and keep his back and neck straight.

Some people are in the habit of taking standing bath. Today, bath rooms are common place of accident. One should avoid taking a standing bath. The floor is slippery because of soap and water, the eyes closed, the breath is held due to shampoo on the eyes and the hands are groping in the dark and there to hold the water tap or the shower. A little tilt in the body-balance can cause a sprain in the back and sometimes if fall occurs, fracture in the hip or the wrist bone can occur. It is feasible to take bath while sitting on a low small stool.

Another common cause of backache is improper motor-seat. The car seat not be away from the foot controls (foot break, clutch and accelerator) rather it should be at a minimum distance so that knees are at a higher level than the hips. In this situation there will be a close and comfortable contact between the back and the seat. Sometimes driving continuously for more than

eight hours can cause muscular pull, sprain and backache, and the person is put on pain-killers and tranquillizers by the doctor. Sometimes players experience stiffness in their back and lot of back twinges and discomfort due to stress and jolts and jerks and sometimes ligamental injury can cause backache. Some persons suffering from malnutrition are required to do toilsome labour get backache, and this problem can recur. Attacks of low back pain (mild or severe) are indications that the back is not in a normal condition.

We are living in an age of stress and strain struggle and strife. Modern man feels tense, over-wrought, nervous and anxious. He can neither cope with nor escape from the relentless demands of modern life. He takes recourse to drugs, "happy pills" tranquilisers, and beverages which may give him temporary relief and respite but in the long run they prove disastrous to his mental and physical health. The word "tension" has been interpreted variously by various psychologists. There are almost as many feelings and descriptions regarding tension as there are persons who experience this type of feeling discomfort and uneasiness, under tense conditions one feels tightness and discomfort. He squeezes himself mentally and feels headache and backache. Weak muscles and poor posture are the outcome of sedentary habits of modern life. Sometimes one suffers from cramps in his legs especially at night. That is due to muscle spasm. Muscle spasm is a protective mechanism. It can be triggered by a number of factors like obesity, a sudden jerk or strain from lifting, stretching or an accident resulting into an injury to ligaments, joints or bones in the spine, prolonged immobility, incorrect body postures. While driving or reading or in pregnancy or even a psychological cause

like nervous tension, depression, anxiety, fear etc. Backache is called hypokinetic disease. Inactivity and a sedentary life style are the vital factors contributing to it. Often it is observed that backache are due to disc problems and arthritis of the spine (spondylosis). It is due to ageing process that the wear and tear or degeneration of spine causes spondylitis-spondylitis is the inflammation of one or more joints of the vertebrae. Degeneration of the spine is characterised by a narrowing of the invertebral joint space (due to the thinning of the disc) and formation of osteophytes (new bony spines) at the swelling of the posterior facet joints normally degeneration of spine starts with every individual after the age of 40 and it appears to be in advanced stage at the age of 65. In certain individuals it may give rise to stiffness, mild pain. People sometimes complain that they are suffering from slipped disc. In reality there is no such thing as a slipped disc. Actually the disc does not slip out of place. It simply bulges when there is too much pressure on the spine. Many doctors prefer to use the terms like herniated disc, prolapsed disc, ruptured disc, bulging disc protruding disc, and extruded disc. They are of the opinion that the nucleus pulposus can squeeze out of its normal site and press on surrounding structures namely roots of the sciatic nerve and give rise to pain. Herniation of the disc is usually the result of some sudden fall an accident, strain while lifting a heavy object a twisting jerk of the trunk. In such situations, the patient complains of pain radiating into the leg. The patient is unable to raise the leg without pain. Then there occur changes of sensations in the leg, such as numbness, tingling or alterations in knee. Generally diagnosis of a herniated disc is not possible from a plain X-ray picture unless a myelogram, a venogram, tests are done.

By virtue of physiological and pathological changes in the female reproductive system, the backache are more frequent in women. Low backache is common in girls before the starting of the periods. But this is usually of spasmodic nature. It last 2-4 days and it does not demand vigorous treatment. Only rest and shavasana are required for respite and relief. Backache is also common ailment in pregnancy particularly during the last three months. It is due to stretching of ligaments and muscles and the change in the spinal curvatures due to the enlargement of abdominal. Low backache is more common among middle class women due to repeated pregnancies. The reason being depletion of body reserves of calcium and vitamin D causing osteomalacia. The ladies during pregnancy should take high protein diet consisting of milk, curd, cheese, soyabean, vitamin D and green vegetables, and seasonal fruits. Drugs of pain killing should be avoided during first three months of pregnancy as these may cause deformities in the baby.

Menopause is a stage in the life of a woman when many changes take place in the body, reproductive system and psychnic and social environment. It is a stage of stress. The physical changes are brought about through the hormones. The bones become soft and ligamentuous attachments become loose causing backache. Sometimes diseases like cancer (of breast and uterus). Tuberculosis, and psychological disorders can cause backache.

Some people suffer from backache because of the structural defects of the spine and its associated structures. Doctors prefer to call these defects as "Physiological Variations". They can be termed as

Scoliosis, Kyphosis, lordosis and spondylosishesis. Scoliosis is the curavature of the spine. There may be one curve or many curves as a result of muscle or bone deformity. Khypnosis is an abnormal curvature of the spine with convexity backward. Lordosis is a condition in which the forward curvature of the lumbar spine is excessive. Another structural defect is spondylolisthesis which means displacement of one vertebra with respect to the next lower vertebra. Another structural defect in the back part of one or more of the vertebra is called spins bifida. The joints of our spine, like any other joint of our body, are liable to arthritic. The spine can also be affected by rheumatoid arthritis which is generally a disease of the body. It affects women more than men. It usually affects first the small joints of the fingers and toes and then spreads to other joints including those of the spine, the cause of this disease is still a riddle. Another disease of the spine is Ankylosing spondylitis which affects men between ages of 30-40 years. This disease can cause sever pain, in the spine. In this disease the spinal, ligaments are ossified (transformed into bones) so that the spine virtually becomes a rigid tube. Sometimes metabolic diseases like osteoporosis and gout may cause a backache sometimes tumours of the spine can also cause backache. Diseases like peptic ulcer, pancreatitis, kidney infections, kidney stone, swelling of fallopian tubes can also be the cause of backache.

The world's biggest problem today at every level is tension and most of it created from the "reved up" accelerated pace of modern living. Some tensions tend to make one intense, restless and unduly irritable (Rajastic qualities). In a certain type of individual tension manifests as an over sensitivity, creating fatigue

and loss of initiative. Lassitude and Inertia (Tamasic qualities) seem to affect ladies more than the men in our modern society. Neureasthemia has become the world's number one disease. Neuresthemia is "dis-ease", a lack of ease, manifesting all of the sub-conscious, destructive tendencies and is sometimes called destructive death wish. Today many patients complain of backache which is either due to depression or tension. In such cases the reasons can be psychological. Sometimes a patient comes to the doctor with the problem of backache which could be attributed to some other cause. It could be sexual problem which the patient hides before the doctor. Any type of emotional or sexual problem can produce backache or headache. Nowadays most of the diseases are considered as psychosomatic. It has been established in medical science that longstanding psychological problems and chronic mental stress bring about a chronic tension in the body-muscles. And back becomes victims of pain. All backaches irrespective of their causes produce anxiety and mental tension which in turn aggravates the back pain. The causes of most backaches is incorrect or wrong posture and degeneration of muscles. But some backaches are due to some derangement of the spine or metabolic defects which may require precise diagnosis. Otherwise the problem can become serious. Yoga offers excellent kriyas and asanas for relaxation.

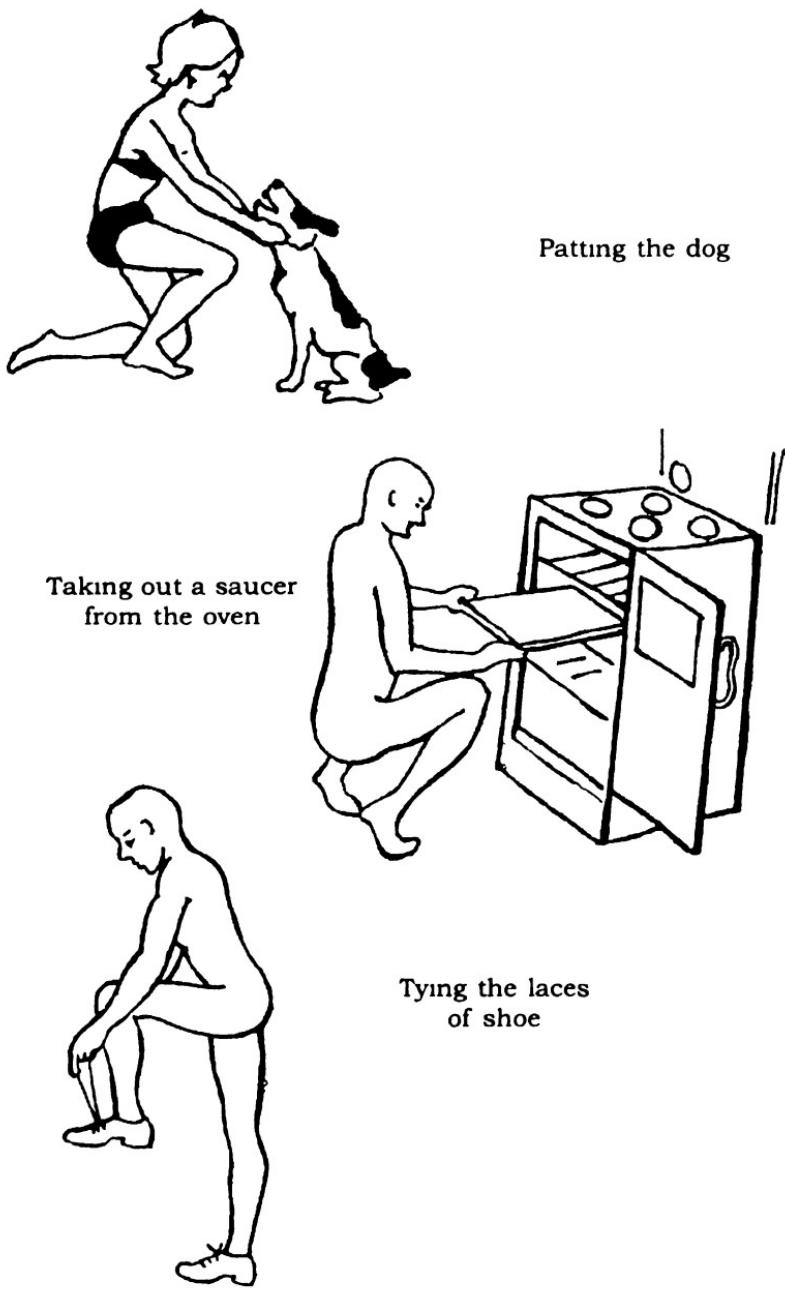
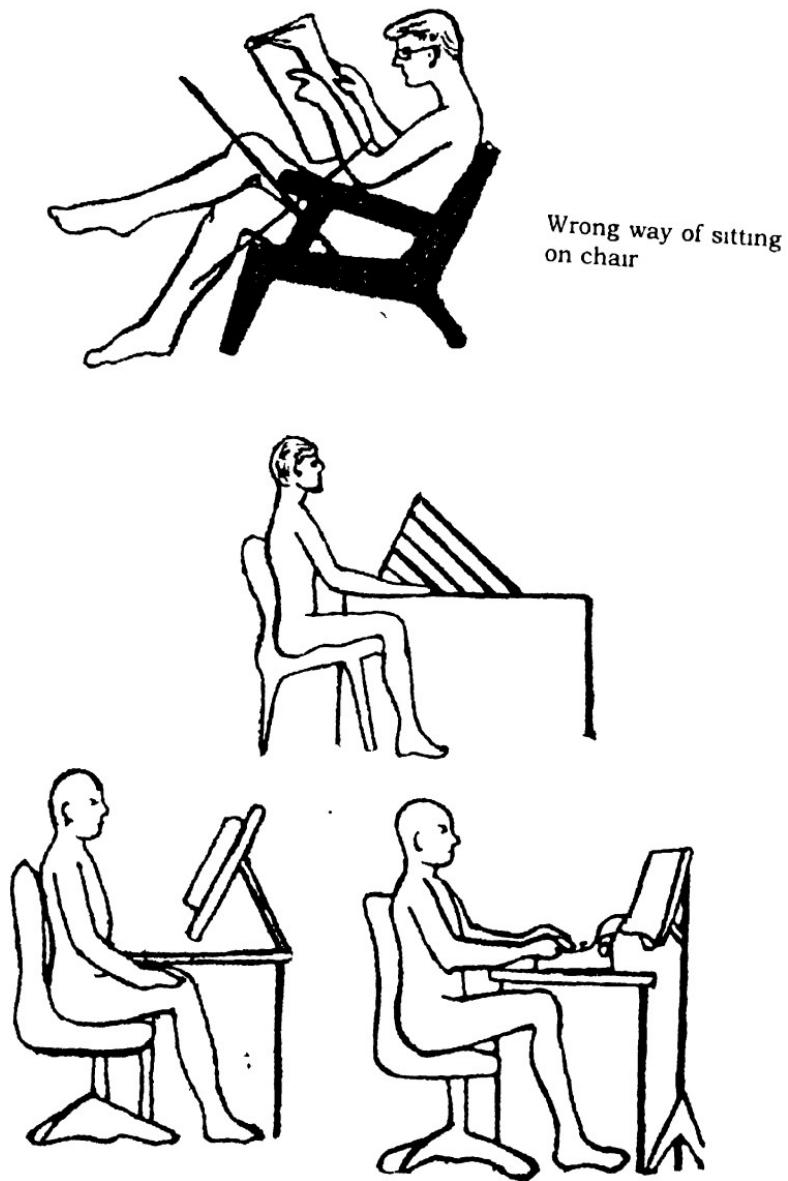


Fig. 2.1



Right way of sitting on chair and working

Fig. 2.2

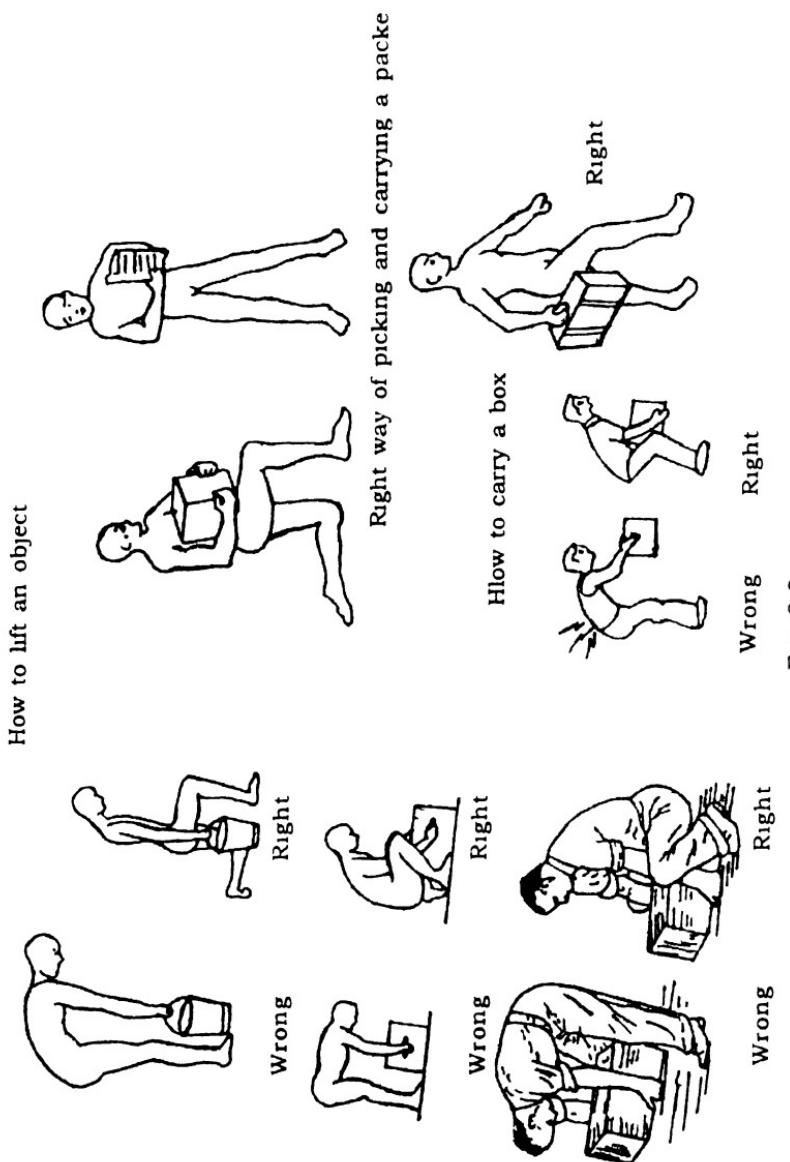


Fig. 2.3

Washing the Utensils



Wrong



Washing the Crockery

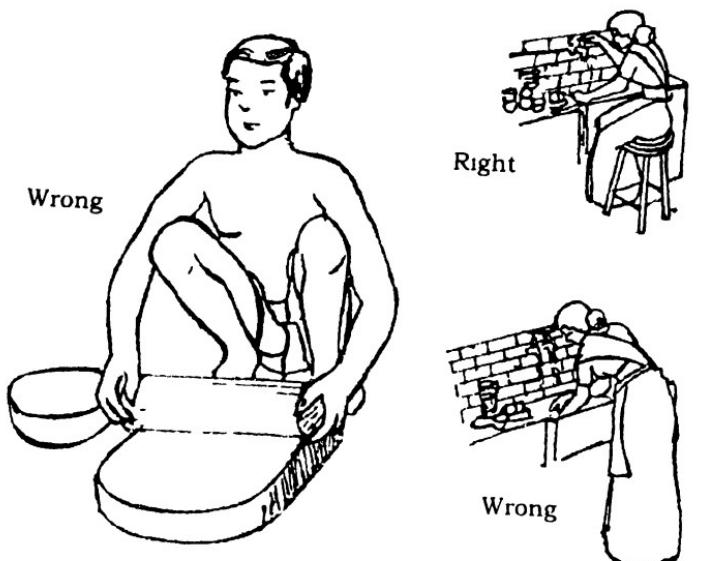
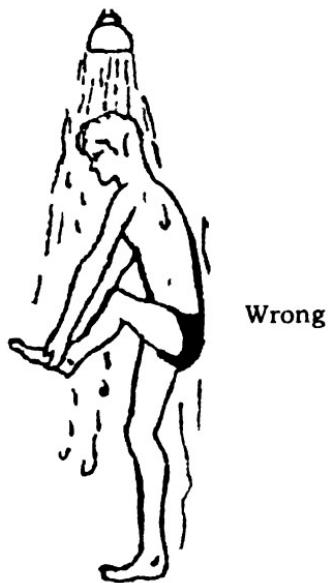
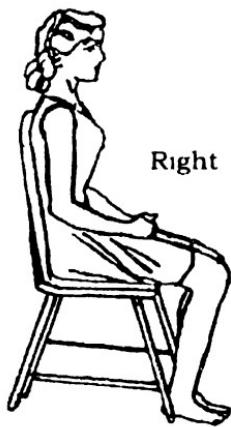
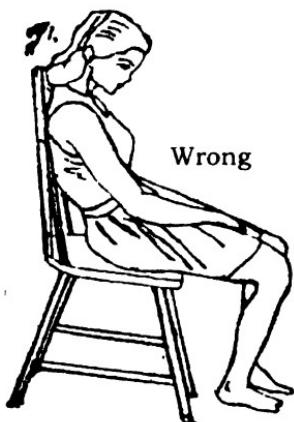
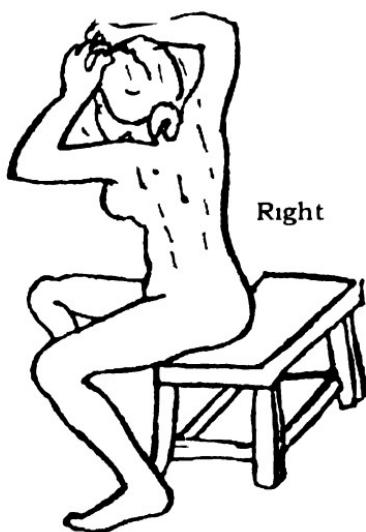


Fig 24

How to sit on a chair

**Never take a
standing bath**



**Always take a bath
in sitting position**

Fig. 2.5

Standing for long time

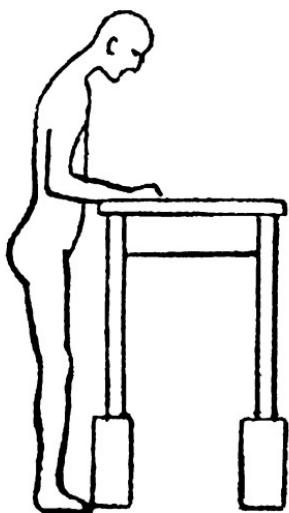


Right

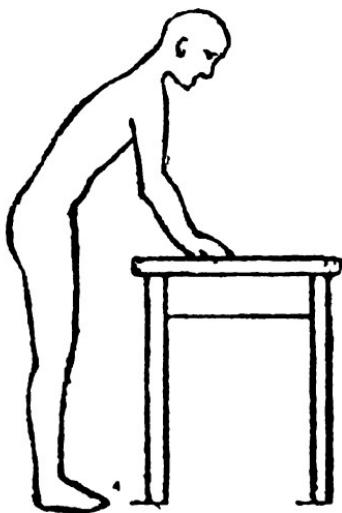


Wrong

Standing for long time



Right



Wrong

Fig. 2.6

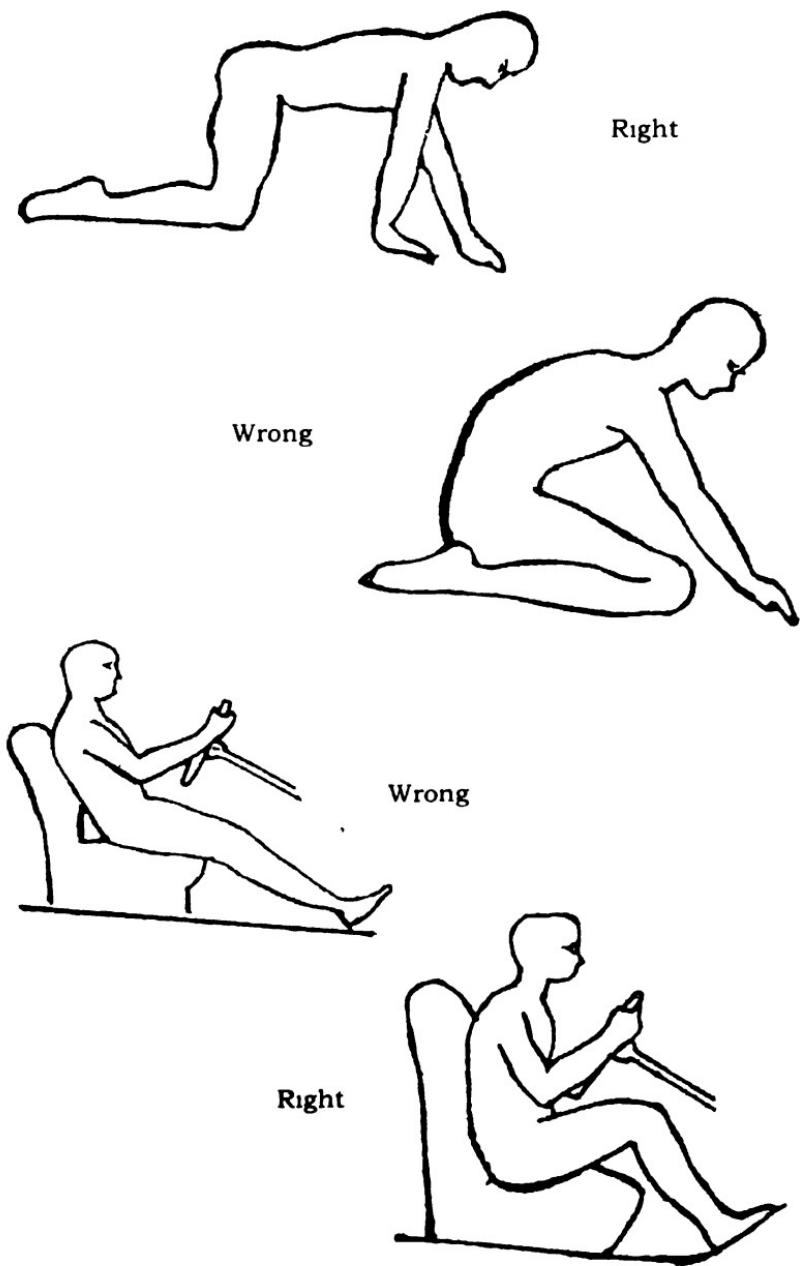
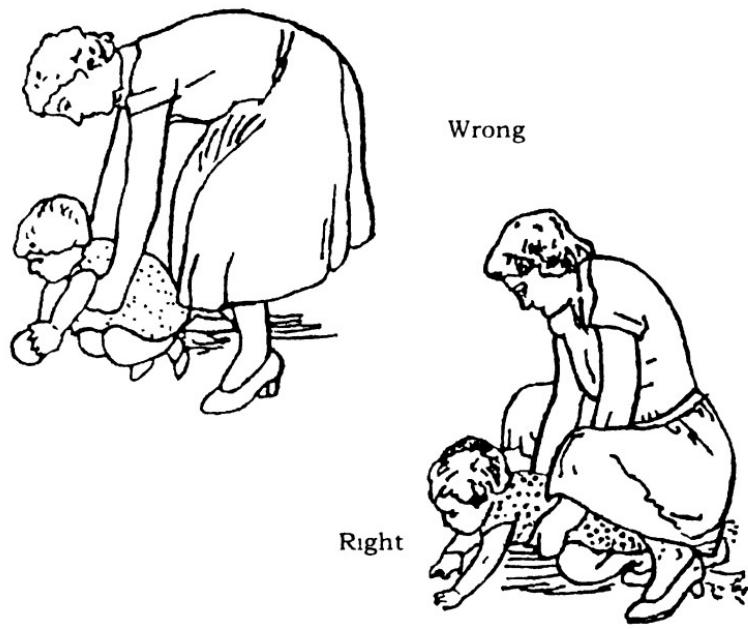


Fig. 2.7



How to lift a baby

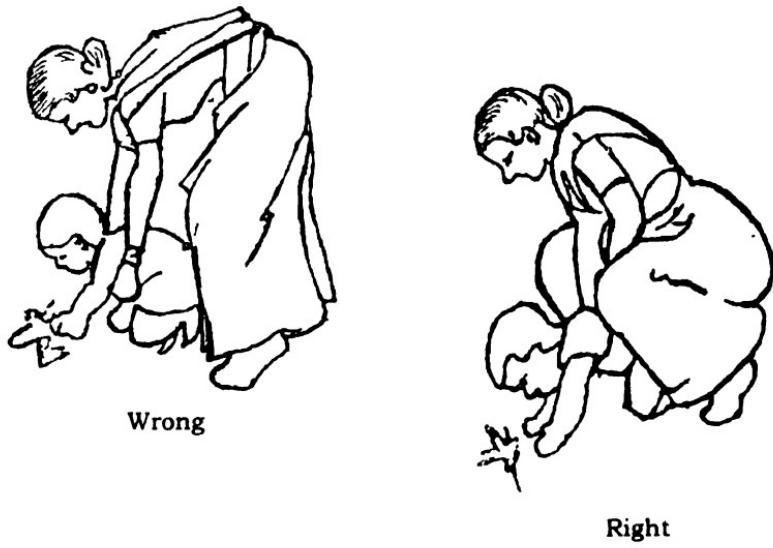


Fig. 2.8



Relaxing like this will certainly give backache

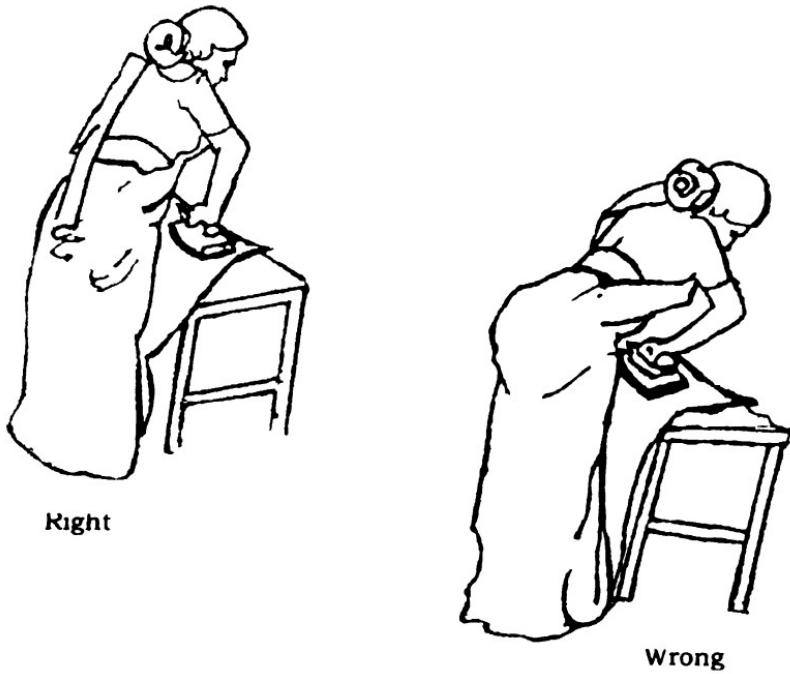
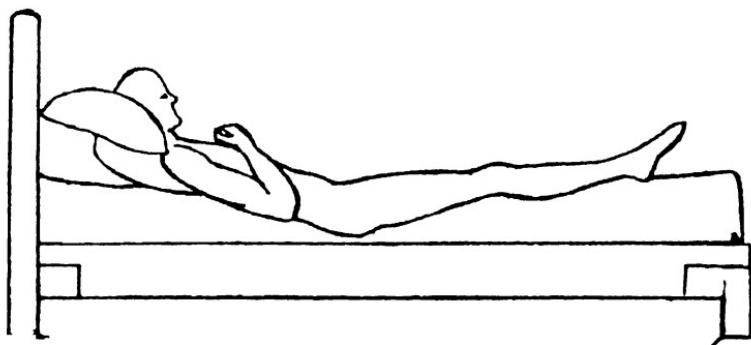
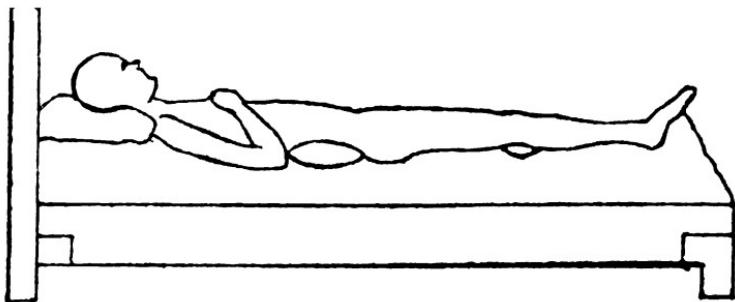


Fig. 2.9

Resting in Bed



Wrong



Right

Fig 2.10

3

What is Yoga?

There are some misconceptions in regard to Yoga. Prevalent especially among some sections in the west. Yoga is not magic or a feat of any kind, physical or mental. It is neither "drill" nor "frill". Yoga is subjective science based on a sound philosophy and deep psychology. Its spiritual mental or physical import cannot be separated from each other. According to Panini, the great Gramarian, the word Yoga is derived from two roots viz yujir and yuja—one referring to yoking (yujir yoga) and the other referring to mental concentration (yuj samadhi) and to sense control yoga standing for mental concentration is the theme of the entire Indian system dealing with yoga. It also implies the control of senses. Thus second derivation of the word yoga consists in Citta Vrithinirodha. i.e., the silencing of all activities in the mind's substance.

Vyasa too, in his commentary on Patanjali, takes reintegration (yoga) and identification (samadhi) as synonymous. Shri Gaddadhara, the teacher of logic (Nyara) says, Reintegration means "identification" (samadhi). The union (samyoga) of some part of one's being with anything. Whatever it may be, of which there is a desire to know the essential nature, even though it be beyond sensory perception through a mind brought under control by an effort to remove its instability is

called "Conscious Identification". "Conscious Identification" is the state of full cognition. This means that in this state the object of contemplation is actually witnessed and the mind is fixed upon it. This is characterized by the silencing of all thought except that of the object contemplated upon. According to vedanta, yoga means supreme realization. Yoga is the reunion of the living self with the supreme self. According to the treatises on yoga, supreme realization is considered as the aim of all yogic practices. But the means of this realization as well as all intermediary stages are also taken to be included in the term yoga. Yoga is thus defined, "The silencing of the mental activities which leads to the complete realization of the intrinsic nature of the supreme person is called Yoga".

According to the Puranas that particular inclination of the mind which is accompanied by an active desire to know the self and which leads to union with supreme is called Yoga. The limits of the physical body can never be transgressed without knowing and mastering the sensory impulses which govern the process of living. The most vital impulses delude us the most, thus safely protecting vital functions from dangerous interferences. That is why the vital instincts and rhythms can only be acted upon and mastered through a very expert technique. It is this technique which is called Yoga.

Basically, all physical and mental knowledge is an experience. A conception uncorroborated by experienced remains a speculation and we can never be certain of its reality. The extent of our knowledge is therefore limited by the greater or lesser extension of our perceptions.

Indian philosophers have asserted that all knowledge is built upon experience. But they maintain that an outward perception only is not a real knowing, and that

the only way for us to know a thing completely, outwardly and inwardly, is to identify ourselves with it. Only when we are one with it, can we know it in itself and not merely as it appears to be. This is the intention behind Yoga which refers to identification.

The Yoga in Man

In recent times, Sri Aurobindo saw a new vision and possibility of advance in spiritual life. He realized that it should and could be possible for human race as such to rise to a new and a higher status of living, a supramental in place of the mental which it now commands, but which is subject to partiality, fragmentaries and division. A supramental status of wholeness, sure of truth, is the development called for and needed in the present situation of human life. This Aurobindo called "Integral Yoga", the yoga which should lift the integral nature of man, by a wide integral process of growth, to a new integral consciousness. In the right view, both of life and of yoga, all life is either consciously or subconsciously a yoga. But all life when we look behind its appearance, is a vast yoga of nature attempting to realise her perfection in an ever-increasing expression of her potentialities and to unite herself with her own divine reality.

Body Context

Yoga does not educate only inner aspect of personality, but it undertakes the education of outer dimensions also. Not only Asanas but pranayama, pratyahara and dhyana play an important role in maintaining the physical health. Through asanas the fat body becomes flexible internal organs are massaged, blood circulation is regulated and the nerves are balanced. Through regular practice of asanas, the secretion of thyroid, parathyroid and indocrine glands

are regulated and balanced. Thus most of the common diseases like asthma, diabetes, high blood pressure, mental ailments, heart ailments, backaches, and abdominal disorders can be cured.

Pranayama and Health

Every part of the body is regulated by the energy supplied by mind and the arteries emerging from spinal chord—the power of the desired flow of energy depends upon the secretion of indocrine glands and this energy is cultivated through blood made available to the glands by the nervous system. The best blood is produced by the life promoting oxygen and nutritional elements which cherish and nourish the body parts. Oxygen through inhalation and nutritional elements are received from the blood but for this all respiratory organs, digestive system and circulatory system are required to be efficient so that continuously produced carbondioxide may be purified and pure blood may remain unaffected from the poisonous gases produced by the undigested food. In pranayama through "Puraka" and "Racaka" the exercise of stomach and its muscles, liver, intestines and lungs is undertaken so that they all may become stronger. Through pranayama the organs get attuned in such a way that a human being digested a lot more oxygen than his ordinary capacity in a day. Pranayama makes circulatory system regular and thus with the help of pure blood circulation even the unconscious part of the mind also becomes active.

Meditation and Health

Meditation is a great medicine. The meditation influences the thyroid gland. It normalises the oxidising power of body and helps balancing the excessive stimulation produced by the secretion of thyroid hormones. Likewise lethargy, mental inertia produced

by the culminated secretion of thyroid hormones are eliminated. Meditation dispels away tensions. During the process of Dhyana, the activity of the Alpha waves is enhanced and a deep rest is attained. Hence one can save oneself from the badly effected respiration due to mental tension. Similarly the energy likely to be wasted in anxiety and negative thinking may be saved.

The psychology of yoga comprises the functions of the internal organs, and its physics is of the five great objects of "Mahabuttas" Ether (Akasa), Air (Vayu), Fire (Agni), Water (Apas), and Earth (Prithvi). The philosophy of yoga transcends both these stages of study. The yoga metaphysics holds that the body is not all, and even the fire elements are not all. We do not see what is inside the body and also what is within the universe of fire elements. Yoga is therefore spiritual, super-physical, or super material because materiality is shed in its achievement and consciousness regions supreme. This is the highest object of yoga, where the individual and the universe do not stand apart as two entities but come together in a fraternal embrace. The purpose of yoga is the union of the deepest within us with the deepest in the cosmos.

The keynote of Hatha Yoga is purification. If the blood is impure, the brain and nerves and psycho-spiritual life cannot be healthy. A healthy condition of the body does not mean great muscular strength. Professional strong men whose biceps and chest bulge like balloons are often not healthy. At middle age their excess of muscles begin to degenerate and turn to fat and they seldom live to ripe old age. Endurance, purification of blood resistance to disease, the disciplined nerves, alert mind are the main qualities of a good health, Hatha Yoga is the ideal system for attaining harmonious development of body, mind and mental health. The harmonious development of body, mind and soul can be obtained through the eight limbs of yoga.

Do's and Don'ts

Try to stand with your lower back flat. When you work standing up, use a footstool to help relieve sway back. Never lean forward without bending your knees. Ladies take note: shoes with moderate heels strain the back less than those with high heels. Avoid platform shoes.

Use a hard chair and put your spine up against it; try and keep one or both knees higher than your hips. A small stool is helpful here. For short rest periods a contour chair offer excellent support.

Make sure you lift properly. Bend your knees and use your leg muscles to lift. Avoid sudden movements. Keep the load close to your body, and try not to lift anything heavy higher than your waist.

Sleep on a firm mattress; put a bedboard under a soft mattress. Do not sleep on your back, put a pillow under your knees. If you sleep on your side, keep your legs bent at the knees and at the hips.

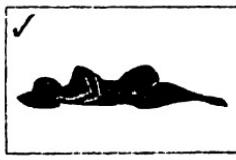


Fig. 3.1: Managing Low Back Pain

1. Yama (Abstinences) moral conduct, truthfulness, non-covetousness.
2. Niyama (Observances) of cleanliness, contentment, self-discipline and self-surrender to God.
3. Asanas :— Right postures.
4. Pranayama (breath control) control of prana by regulating breathing processes of inspiration, expiration and retention of breath.
5. Dharna :— (Concentration) fixing the mind on one object at a place or point.
6. Pratyahara :— (Sense withdrawal) turning the senses inward and withdrawing them from external objects.
7. Dhyana :— (Contemplation) or meditation. Keeping the mind exclusively on one object or idea for sometime without any interruption.
8. Samadhi (Self-realisation) superconscious experience in trance where enlightenment or union with self takes place.

The first five steps refer to external and the remaining three to internal system of body. Hatha Yoga is a wonderful system of rejuvenation. By practising daily pranayama and yoga asanas, the stiffness of the muscles and joints is checked.

4

Asanas for Backache

Asana literally means a seat. Here seat does not mean a cushion or some such thing that is spread on the ground. Asana is a pose of the body or the posture which it assumes at the commencement of the practice. There is one set of Asanas which can be taken as aid in meditation. Some specific Asanas have specific meaning and purpose for specific diseases and ailments. Hatha Yoga prescribes several postures for different purposes. The Asanas should be firm and easy. It should be steady and do not cause discomfort of any kind. It should not make student conscious of the body through tightness or tension. It should be a normal posture in which he can sit for a long time. In Asana, the head, neck and spine should be in straight line, and the mouth should be shut. The breathing should be done through nose. Also one should not sit on the bare ground. The "Gita" prescribes that the seat should not be too high or too low. The students may fall down if the seat is too high and if it is too low, there is the likelihood of insects and reptiles. Creeping into the seat. The spine should be kept straight. Asanas should be effortless. There should be no effort not only in the body but also in the mind. Absolute ease of relaxation is the sign of perfect asana. If there is pain or jerk or a pinching sensation, if should

mean that asana is not properly fixed. When this bodily control is achieved, there comes freedom from the onslaught of what are called the "Pairs of opposites", such as the heat and cold, hunger and thirst, joy and grief. Anything that creates a tension in one's system is a pair of opposites. These are overcome by a correct technique of asanas. The pairs of opposites become active in our system when the prana becomes restless. The restlessness of the prana causes hunger and thirst. The prana is calmed not only by the practice of pranayama but also by asana. When the prana is poised, there is a lessening of the feeling of the pairs of opposites. When the body remains in a state of balance, the prana too tends to be harmonious. The place selected for doing asanas should be free from distracted noise, gnats, mosquitoes, ants etc. It should be a calm and quiet place. A temperate climate is desirable (it should be neither too hot nor too cold). Asanas should not be done in haphazard manner. Proper coherence and sequence is to be maintained. Concentration, sequence and breathing are very important principles to be adhered to. Shavasana the most perfect pose for relaxation should be done last of all. There are some specific asanas and exercises for backache. Every asana is not helpful to backache. Some asanas can aggravate backache and cause many serious complications. Persons suffering from backache are required to do the following warm up exercises and asanas daily preferably in the early morning hours. Light warm-up exercises are necessary before doing asanas. To have full effect of the asanas, they must be accompanied by pranayama exercises. The following stretching warm-up exercises have been selected for the persons having backache :—

1. Chin-High Kicking

Stand erect with your feet together and your arms stretched out at shoulder height, inhale slowly and rhythmically without any strain. Kick upwards and forwards towards your hands. First with your right foot followed by left foot. Exhale as you lower your kicking leg. Repeat it 5 to 10 times.

2. Side-Bending

Stand erect with your feet wide apart and your hands on your hips with your elbows leaning side-ways. Breathe freely and bending your body to the left tilting your head and neck with it. Then likewise bend towards the right. Repeat it 10 to 15 times.

3. Running While Standing

Stand erect with legs apart and hands on your waist. Breathe freely and run on the spot raising your toes. Your knees as high as you can. The higher you raise your knees, the more, beneficial it is. Do it for 40 seconds.

4. Three-Way-Leg Hands Swing

Stand erect next to a sturdy object which you can hold conveniently. Rest your left hand on the sturdy object and stretch your right arm right at shoulder level. Keeping your head up, mouth closed and stretch your right leg backward 10 times and lean your body forward. Stretch as high as you can without any jerk or strain. Repeat 15 times without any jerk or strain. Inhale slowly while stretching your body forwards and exhale while returning to the original position.

5. Head Contraction

Sit in sidhasana or in any convenient pose with your back straight and elbows well up. Link your hands

behind head. Inhale breath and retain the breath for a couple of seconds. Then exhale slowly and push your hands against your head.

6. Hands Stretching

Stand erect with feet together, stretch your hands and raise your toes. While stretching the hands at shoulder level-inhale slowly, retain breath for a couple of seconds and while lowering down the arms and toes, exhale slowly repeat it 10 to 15 times.

7. Waist Side Bend

Stand erect with your feet wide apart and link your hands behind your head. Keep your back straight, bend to the right, your arms level with your ears and make sure that your body does not lean forwards and backwards. Inhale while bending towards the right and exhale while coming to the original position. Repeat it 10 to 15 times.

8. Side-Leg Raised

Lie on your left side with your left hand supporting your head and keep your right hand on the floor in front of you and your legs together. Keep your body still. Raise your right leg as high as you can but your body should not lean backward. Lower your leg, while raising the leg inhale slowly., and exhale when the leg is lowered down, exhale repeat it 10 to 20 times.

9. Knee to Chest Raise

Lie on your back with your feet tight together and your arms by your side. Keeping your head on the floor, raise your legs high and hold them at an angle of 45 degrees. Inhale and retain the breath for a couple of seconds, and then bend your legs and bring your knees

near your chest, and exhale slowly. Lower your legs and come to the original position. Repeat it 10 to 15 times.

10. Cycling in the Air

Lie on your back with your legs tight together and your arms stretched out. Bend your knees and raise your left and right leg. Move your legs quickly as if pedalling a bicycle. While bicycling in the air, breathe freely, and do inhalation, retention and exhalation slowly. This type of exercise is useful for the muscles around abdomen, legs, hips and lower back. Repeat it 10 to 15 times.

ASANAS

1. Siddhasana (Adepts Pose)

Siddha in Sanskrit means adept. The knees of the beginners may find it difficult to stay flat on the ground but by practice they can overcome this difficulty.



Fig. 4.1: Siddhasana

Technique

Sit on the folded rugged or folded blanket on the floor, bend the left and pull the foot in against the ground. Now bend the right leg and bring the foot across and insert its outer edge in the crevice between the calf and the thigh of the left leg. The right heel should press against the pubic bone and both the knees should touch the floor. Keep the palms of the right and left hands on the right and left knees. Sit upright keeping the head and the back in a straight line.

Benefits

This asana develops mental potentiality, soothes the muscles and tones up the nervous system, supplies sufficient blood to the pelvic region, cures arthritis and keeps the body in pose and equilibrium.

2. Simhasana (The Lion Pose)

This pose appears to be odd and unpleasant but is very much rewarding for throat, face and neck. This is the only asana in which the practitioner can breathe through mouth.

Technique

Sit on the folded blanket with legs stretched straight in front. Raise the seat, bend the right knee and place the right foot under the left buttock.

Similarly, bend the left knee and place it under the right buttock. The left ankle should be kept under the right one. Sit on the heels with toes towards backwards and put the weight of the body on the thighs and knees. Stretch the trunk forward and keep the back erect. Place the right and left palms on the right and left knees. Stretch the arms straight and keep them rigid. Then spread the fingers and press them against the knees. Open the mouth and eyes wide and protrude the tongue

out and down as far as you can. Gaze at the centre of the eye brow or at the tip of the nose. Remain in this pose for a couple of seconds.

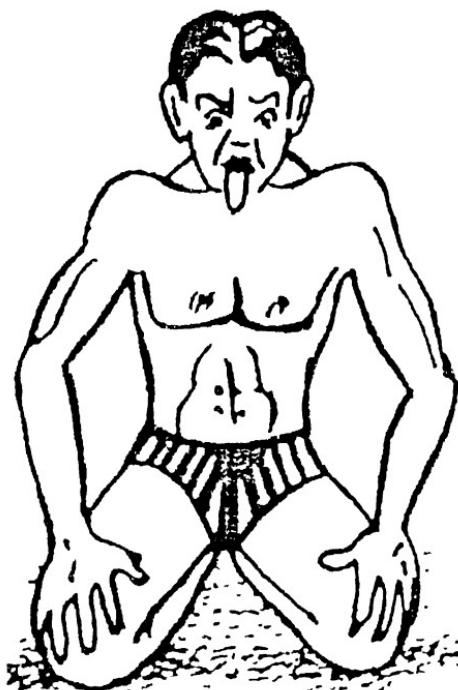


Fig 4 2: Simhasana

Benefits

This asana will direct the flow of blood to the throat and larynx and will tone up the muscles of throat and face. It is beneficial for those who have backache.

3. Padamasana (The Lotus Pose)

Padamasana is a unique pose for meditation worship and prayer. It is called padamasana after the famous flower lotus. This asana needs sufficient suppleness. The beginners may feel difficulty in doing this asana. But regular practice will make them perfect.

Technique

Sit on the folded blanket with your legs outstretched. Bend each leg and place each foot on the opposite thigh, soles turned upwards. Pull the foot as high as you can. Keep the palms of the right and left hand on the right and left knees. Keep the head, neck and spine straight and erect, and breathe slowly.



Fig. 4.3: Padmasana

Benefits

This asana increases the psycho-physical energies. It tones up the abdominal muscles and helps in proper functioning of the circulatory system. This asana also develops the mental and physical stability and cures rheumatism, relieves stiffness of joints and muscles.

4. The Bhujangasana (The Cobra Pose)

This asana belongs to the category of sacrum asana. This asana is highly beneficial for persons suffering from backache particularly disc problem. People suffering from hernia, peptic ulcer and intestinal tuberculosis should not do this asana.

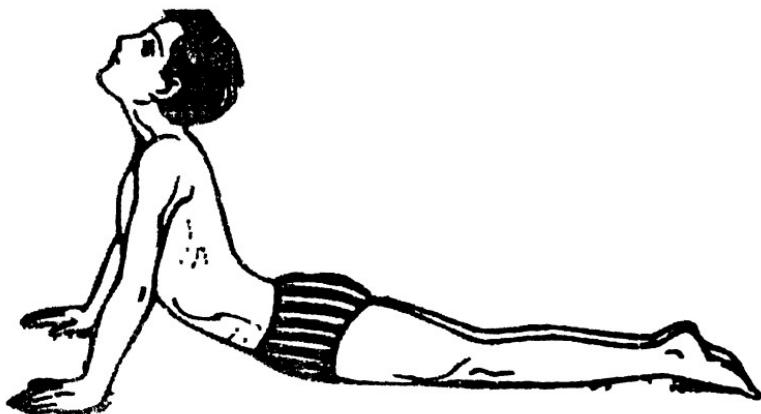


Fig 4 4. Bhujangasana

Technique

Lie flat on the stomach with legs straight and the feet extended. Place the hands, palms down under the shoulders, slowly raise the body above the navel until the arms are straight but the stomach and the legs must touch the floor. Bend the head, back upwards. Remain in this pose for a couple of seconds. Breathe in while raising your head, retain breath for a couple of seconds and exhale while putting the head downwards.

Benefits

The Bhujangasana is one of the efficacious asanas for the spine and abdomen. It removes unwanted flesh from the hips, makes the spine supple and flexible, and tones up the nervous system and the muscles of the back. This asana also strengthens the adrenal glands.

5. Pawanmuktasana

This asana is performed with both the legs. This asana is very simple but effective. Persons having excess fat in the abdominal region may find it difficult to touch the chest with nose. They should do with one leg only.



Fig. 4.5: Pawanmuktasana

Technique

Spread a folded blanket on the floor and lie down straight facing the sky. Inhale and raise both the legs up, bend them from the knees and hold them with both the hands and bring them close to the chest. Then raise the head up so that the face remains between the two knees. Exhale and breathe slowly. After inhalation hold the breath and bring head, legs and hands to original position and relax.

Benefits

This asana cures gastrotroubles and backache. It also reduces hyperacidity. This asana strengthens the muscles of the legs and spine.

6. Jeyestikaasana (The Best Pose)

It is more or less the same as Advaasana with slight variation. It is also very simple, easy and comfortable asana, and can be performed by anyone irrespective of age, sex or place.

Technique

Spread a blanket on the floor and lie down as shown in the figure. Interlock the fingers and place the palms of the back of the head. Breathe slowly deeply and rhythmically. Relax the whole body. After inhalation retain breath for a couple of seconds and exhale breath slowly.

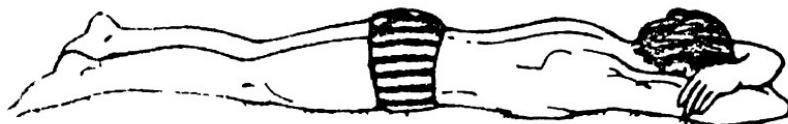


Fig. 4.6: Jeyestiskaasana

Benefits

This asana tones up the nervous system and the muscles of the neck and the back. It relieves neck pain, shoulder pain and backpain. It also develops power of concentration and removes headache and migraine.

7. Gomukh Asana (Face of a Cow Pose)

This asana is used for meditation and breath control. This asana when performed correctly resembles the face of a cow.

Technique

Sit on a folded blanket on the heels, knees together and head, neck and spine straight. Bend the right arm, raise the elbow and lower the hand as far as down middle

of the back without disturbing the upright posture. Bend the left arm and bring the left hand up the centre of the back until the fingers of both hands interlock. Breathe deeply and remain in this pose for a couple of minutes. Return to the original position and relax.



Fig. 4 7: Gomukhasan

Benefits

This asana cures backache, sexual ailments, insomnia, kidney trouble and rheumatism. It also strengthens the muscles of shoulders, upper back and triceps. This asana also checks the formation of calcium deposits at the shoulder joints.

8. Vrikshaasana (The Tree Pose)

This asana is also very simple but efficacious for persons suffering from Backache. It is one of the

fascinating asanas. When performed correctly it looks like a tree.

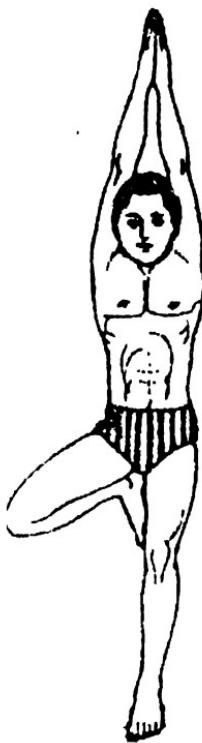


Fig. 4.8: Vriksha Asan

Technique

On a folded blanket, stand erect. Keep the head, neck and spine straight. Raise right leg and touch the left thigh and raise your hands also as shown in the figure. Breathe in and retain breath for a couple of seconds. Exhale when the leg is brought down, and relax.

Benefits

This asana tones up the muscles of the legs and back. It also gives relief to the persons suffering from backache.

9. Naukaasana (The Boat Pose)

This asana is one of the simplest asanas belonging to the energy blocking group of asanas. Energy in the form of prana is in every part of the body. It must have free flow. Sometimes due to certain impurities of chemical reactions the free flow is blocked resulting in stiffness, rheumatism, and muscular tension.

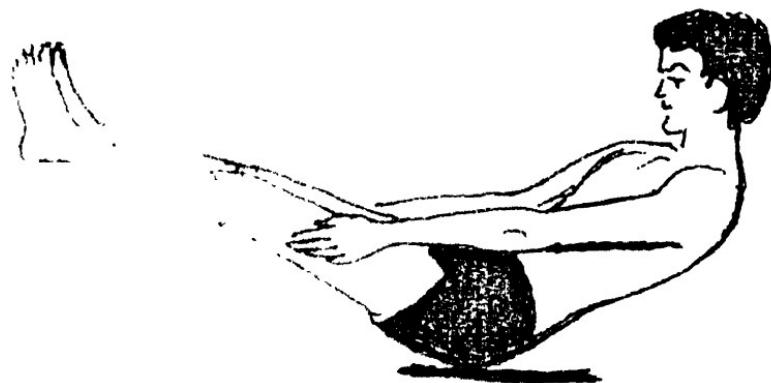


Fig. 4.9: Naukaasana

Technique

Lie flat on the floor facing the sky with hands, clasped at the back. Raise your feet, head and the chest up as to form a curve on the floor, with your body resting on the abdomen. In this pose the body looks like a boat. Breathe slowly and rhythmically. When the legs and hands are raised, retain breath for a couple of seconds.

Benefits

This asana eliminates the gas from the abdomen, cures belching. It also brings the dislocated navel plexus to its original position. This asana strengthens the muscles of the stomach and the back. It is very efficacious for backache.

10. Margaria Asana (The Cat Stretch Pose)

This asana is one of the simplest and can be performed by anyone. Margaria in Sanskrit means "Cat". This asana belongs to the energy block group of asanas.

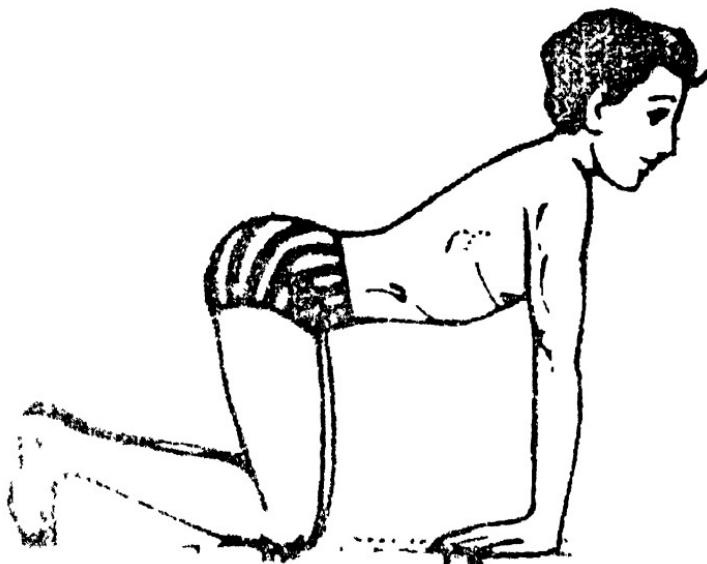


Fig 4.10 Margaria Asana

Technique

On a folded blanket sit in siddhasana. Raise the buttocks and stand on the knees and at the same time place both hands flat on the floor in front of the body under the shoulders, inhale and raise the head. Then exhale and lower the head and arch the spine. Again bend the spine and raise the straight and vertical.

Benefits

This asana is beneficial for backache. The asana tones up the nervous system, adrenal glands and strengthens the muscles of the arms, legs and makes the back supple.

11. Shavasana (The Corpse Pose)

Shavasana is very important, powerful and popular asana. This asana is called "Mrita" Asana, "Shav", "Mrit" means corpse or dead body. Today when stress and strain of life are increasing rapidly, Shavasana is the only asan that provides relaxation to our psycho-physiological system.

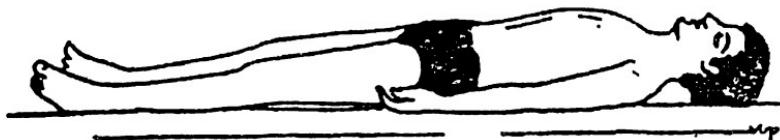


Fig. 4.11: Shavasana

Technique

On a soft carpet or folded rug lie full length on back with arms away from the body and palms facing upwards and feet slightly apart. Close the eyes and mouth and withdraw the consciousness by stages, beginning with the feet. The ankles, the knees, the abdomen, the chest, the neck and the face. Finally keep the mind free. Start breathing deeply, slowly and rhythmically. The practitioner at the final stage of this asana should feel that his body is motion less like a dead body. In this asana all tissues, nerves and muscles are to be relaxed. The technique of this asana must be followed carefully. Deep breathing inhalation and exhalation are absolutely necessary for concentration which gives complete relaxation.

Benefits

Shavasana is an excellent asan for complete physical, mental and spiritual relaxation and refreshment.

Tension, irregular breathing or faulty breathing can cause many diseases. This asana removes all mental tensions, stress and strain and stimulates the entire nervous system. This asana when performed correctly gives rest, peace, relaxation to body and mind and can remove backache and nervous disorders.

5

Pranayama for Backache

Asanas must be followed by Pranayama. The physical body and the prana are inseparably bound up with each other. The prana is the vital energy which pervades the entire physical system and acts as a medium between the body and mind. The prana is subtler than the body but grosser than the mind. The prana is not merely breath. The breathing process, inhalation, retention and exhalation show that makes the heart beat, lungs, function and the stomach secrete juices. The prana never goes to sleep just as the heart never stops beating. The yoga system has involved a technique by which prana is made to assist in the practice of yoga, and this is called pranayama. The prana functions in various channels of the body. When we do ceaseless efforts and toilsome labour, prana loses its harmony and remains in a stimulated condition. It gets into a state of tension and makes the person restless. While doing pranayama exercises the mind should be steady free from tension and breathing should be slow and rhythmic. No pranayama should be practised when one is in a state of emotional disturbance. In the beginning stages of pranayama there should be no retention of breath but only deep inhalation and exhalation. Instead of quick breathing slow and rhythmic breathing should be done. The time to be devoted to pranayama depends on individual condition of the body and the kind of life one

leads. All these factors are to be kept in mind. The pranayama is not to be done after one's meal. No sound should be produced before inhalation and exhalation. Respiration and breathing are not synonymous to each other. Breathing stands for the mechanical act of inhaling air into and exhaling it out of the body. The moment a body sees the light of the day it starts breathing spontaneously. Respiration on the other hand is a life giving process which continues ceaselessly from birth to death. Prana is the force behind and within breath. Prana is the force, magnetism and electricity. It performs various vital functions in different forms. It controls breathing excretory functions, absorption of air and food, energy distribution from food and breath, movement of eye lids, sneezing and coughing. Thus pranayama is a scientific, mental and physical exercise, particularly of diaphragm, the abdominal muscles the heart, liver, the nervous and endocrine systems and spinal cord. The following pranayama exercises if performed correctly will be beneficial to persons suffering from backache. Moreover, these exercises will tone up and rejuvenate all the systems of the body.

1. Suryabheda

Sit erect in sukasana or siddhasana posture. Keep the chest, neck and head straight closing the eyes and mouth inhale through the right nostril retain the breath for a couple of seconds, and then exhale slowly and rhythmically. In this exercises the period of retention of breath is to be increased gradually. The constant practice of this pranayama can give lot of relief to the back and tone up the muscles and ligaments of the back.

2. Ujjayi

Again sit erect in sukasana or siddhasana posture. Inhale through both the nostrils in a slow, rhythmic

manner. Retain the breath as long as you can conveniently then exhale breath through the left nostril.

3. Sitkari

Sit in sukhasana or siddhasana posture, fold the tongue in such a manner that the tip of the tongue touches the upper palate. Draw the air through the mouth producing a sound of "See See". Retain breath as long as you can and exhale through both the nostrils. These three processes form one round. This pranayama exercise increases the beauty and vigour of the body and gives lot of relief to the persons suffering from backache.

4. Sitali

Sit erect in siddhasana, contract the lips and throw out the tongue. Fold the tongue like a tube and draw in the air through it making a hissing sound. Fill the lungs and stomach slowly with the air drawn in, and retain the same as long as you can conveniently. The sitali pranayama purifies blood and strengthens the muscles and ligaments of the back.

5. Bhastrika

Bhastrika implies bellows quick succession of powerful expulsion of breath is the chief characteristic of this pranayama. Sit erect in siddhasana. Close the mouth, inhale and exhale quickly 8 to 12 times in rapid succession like the bellows of the village smith. While practising thus pranayama a hissing sound is heard.

By undertaking pranayama exercises, one can develop a harmonious function of the different systems of one's body. Pranayama, if done correctly develops the lung power to its fullest capacity which leads to the purification of the cells tissues and other organs. Nature

has blessed us with a certain amount of healing power though its quantity varies from person to person. A child has an abundance of life force whereas a grown up persons who has wasted his life force through dissipation, has minimum healing power left in his body. Pranayama helps in the preservation of this healing power. The more life force is stored, the stronger one becomes physically and mentally.

6

Yogic Relaxation

Generally people misuse the hours of leisure, rest and relaxation. Some feel relaxed in coffee houses, clubs, or bars, hotels and restaurants, others feel relaxed while playing at cards or idle gossips and some feel relaxed under the influence of liquor or other intoxicants. For backache, all the doctors recommend hard bed. Unfortunately, the term "Hard bed" is misunderstood. By hard bed we mean a table top bed with a soft cushion in it. Rubber mattress beds are comfortable beds. In fact, hard bed should be used by everyone. Yoga relaxation postures coupled with pranayama exercises can prove extremely beneficial to all in general and persons suffering from backache in particular. Shavasana is an excellent asana for complete physical and mental relaxation and refreshment. Tension irregular or faulty breathing can cause many diseases deep and rhythmic breathing in Shavasana is highly beneficial for body and mind. Shavasana removes all mental tension, stress and strain, physical fatigue and stimulates the entire nervous system. It also eliminates toxins accumulated in the body, recharges organism with prana, restores energy and cures high blood pressure, heart ailments, insomnia, nervous disorders and depression. One who has mastered the art of yogic relaxation can remain relaxed in every situation. Breathing and relaxation are bound up with each other. While relaxing mind is to be concentrated on breathing. It is not as easy as it appears to be. One has to observe where and how one is breathing. For persons suffering from backache, rest and relaxation are great medicines. But it should be yogic

relaxation. Most of the patients with backache have observed that in yogic relaxation they get soothing effect and their back pain subsides. The yogic relaxation is super relaxation which in a few minutes relieves mental tension and physical fatigue. The muscles contract as and when required in response to a message from the brain centres. During sleep man withdraws from the outer world and the conscious mind remains passive. It is only through conscious or voluntary action to disconnect more totally than in sleep those wires which lead to the various electromagnets, thus reducing the consumption of narrow impulses to the minimum. This is yogic relaxation or super response. According to yogic relaxation it is not only the mechanical outward silence, that matters, but silence from within also. In yogic relaxation mind controls the body entirely disconnecting the conductor wires one by one reducing the flow current to the electro-magnets of the muscles throughout the body almost to nil. In yoga, the classic asanas for relaxation are Shavasana and Jyestikasana. By these asanas the practitioner feels that each part of the body becomes relaxed. Yogic relaxation occupies very important place in Hatha Yoga. Yoga treats human body like a flower. In psychology when protruding emotions are controlled or obstructed by self-imposed ethical powers then the repression takes place whereas in yoga the Seer's spiritual discriminatory wisdom which transcends even ethical ego procreates restraint and thus the emotions are purgated. In this purgatory process, other parts of yoga also prove to be of importance. Since the emotions have both the physical as well as mental dimensions, the pranayama and asanas may be helpful for their catharsis. The solution of all youth's physical ailments, psychological maladies and mental tensions rests with yoga which is indeed the most practical preventive and curative medicine to control the ailments of modern life. Since the body is the means to duty, health, pleasure and salvation, it should be protected by everyone with the help of yoga.

PART-IV

ARTHRITIS

1

All About Arthritis

The word Arthritis is derived from the Greek-word arthon "Joint" and "tis" a suffix used medically to mean inflammation, refers to any diseases of disability in which there is inflammation in a joint. Obviously arthritis is not a single disease entity but can have many different causes. Frequently the expression "rheumatism" is used as a synonym with arthritis, but strictly speaking it refers to pain and inflammation not only in the joints but also in nonparticular connective tissues either in joint area or throughout the body. A third term "rheumatic disease" is widely used, especially by physicians, to include all the above and also a group of usually serious disorders of connective tissues that bear the designation "Collagen disease". An introduction to the anatomy and function of connective tissues is essential for an understanding of disease involving these structures. The connective tissues comprise the bones, cartilages, ligaments, tendons, and muscles that form the supporting tissues of the body and permit motion. Each joint consists of the articular ends of the bones concerned. In addition each joint contains nerves and blood vessels, tendons and muscles that provide motive power and a small amount of viscous synovial fluid that lubricates the gliding surfaces. Many articulations such as those of the fingers and the knee are typical hinge joints in that they permit

motion in one plane only. At the other extreme of joint action are the shoulders, hips, wrists and ankles, all constructed on the principle of the ball and socket, which permit motion in all directions. Between these types are various modifications such as the elbows which permit rotation, and the temporomandibular joints of the jaw, which permit side to side motion in addition to hinge action.

Rheumatism, a general descriptive term meaning discomfort, pain and stiffness in or around muscles and joints. It may be the result of injury, such as strain, or the inflammatory or degenerative processes affecting the joints or ligaments the muscle or the nerves. More specifically it may refer to rheumatic fever forms of Arthritis and a variety of conditions designated by a descriptive adjective such as articular rheumatism, muscular rheumatism etc.

1. Osteoarthritis

Osteoarthritis is a non-inflammatory or degenerative disorder of joints characterised by progressive deterioration of the articular cartilage and formation of new bone (Ostephytes). It is called (a) primary when the aetiology is unknown and (b) secondary when it follows some known cause e.g., trauma, infection, rheumatoid arthritis. It is more common in weight bearing joints such as hip and knee. It is also seen in spine, carpometacarpal joint of thumb and joints of fingers. The concept of "Wear" and "Tear" is generally attributed as a cause of osteoarthritis. It holds true as osteoarthritis is seen commonly in weight bearing joints, mainly in the middle age and older age groups. Various other factors like obesity, hormonal and genetic factors have been blamed to predispose to idiopathic osteoarthritis. In osteoarthritis there occurs loss of the ground substances of the cartilage resulting in disturbance of

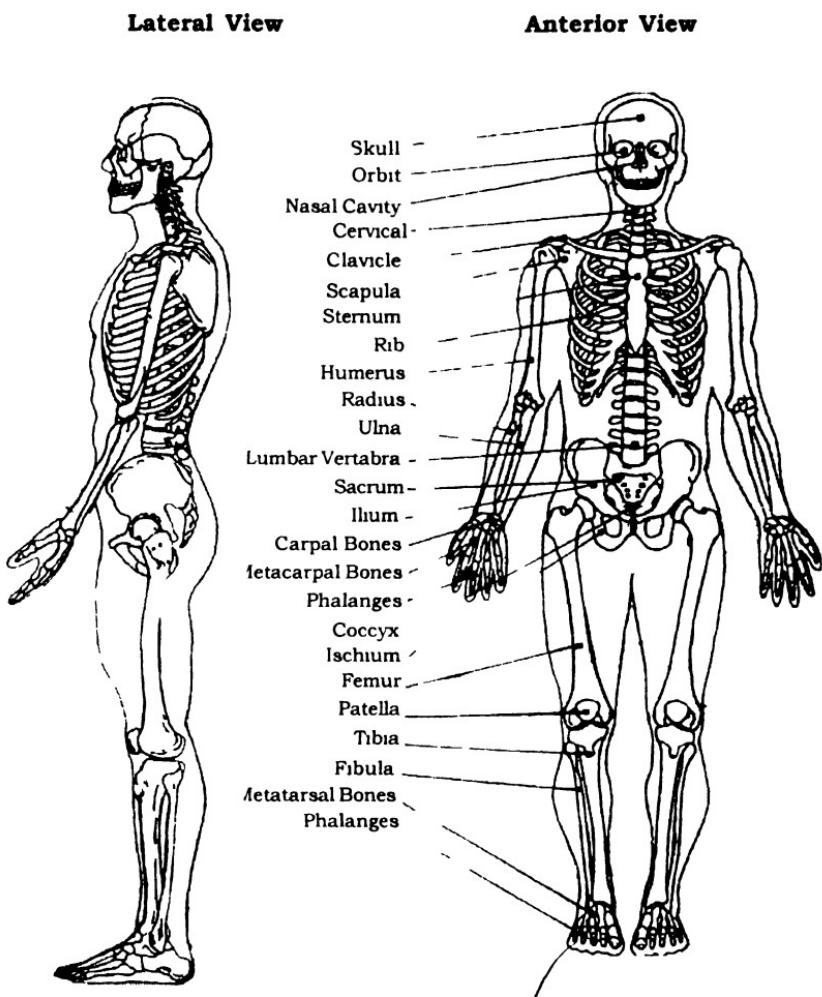


Fig 11 The Skeleton

dissipation of the stresses. The collagen fibres are therefore subjected to excessive stresses and strains leading to their rupture. The cartilage develops fissures, gets eroded and exposes the underlying subchondral bone. Resorption of these microfactors results in subchondral cyst formation a characteristic radiological

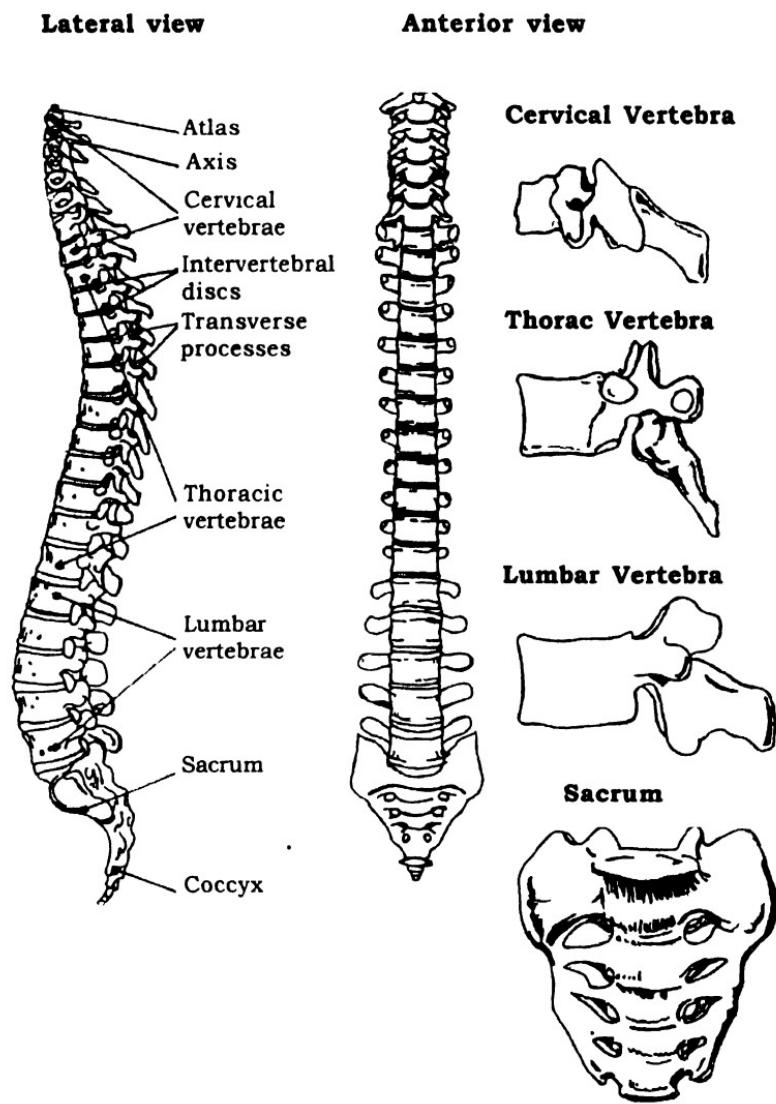


Fig. 1.2: The Spine

feature of osteoarthritis. There develops inflammatory synovitis, new bone and cartilage outgrowths at the margins of the articular cartilage, seen as osteophytes on X-rays. Pain is the main symptom of this disease.

Initially, the pain occurs usually on or after weight bearing activity or at the end of the day. Later on, it becomes continuous occurring even at rest. The joint becomes swollen due to synovitis. Stiffness gradually sets in, following severe pain and capsular contractures. In late stage of the disease the joint becomes deformed. A common example is genu varum deformity at the knee. It may be caused by ligamentous instability or muscle imbalance.

Anterior View

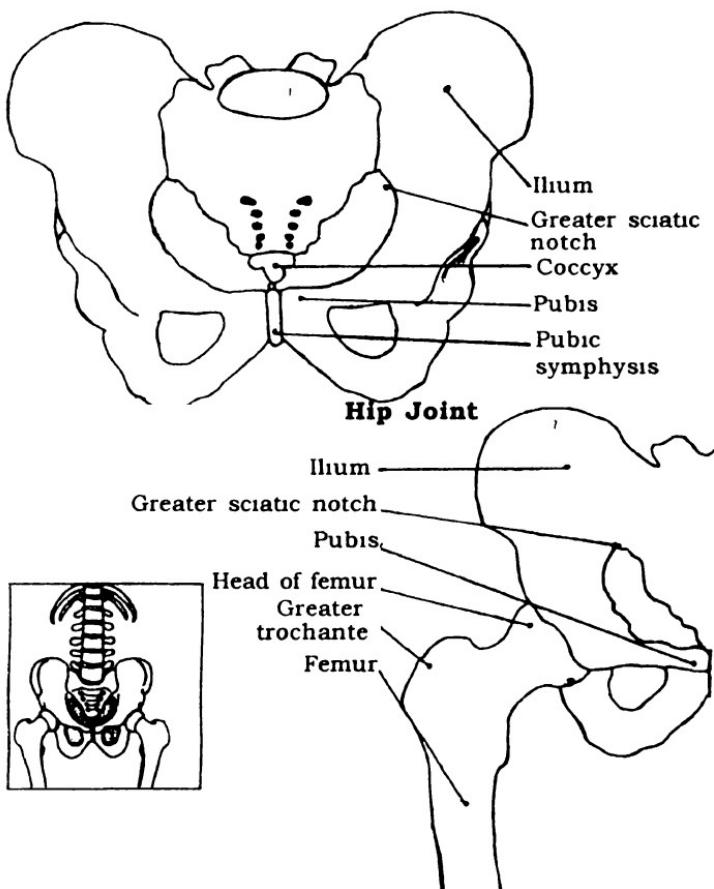


Fig. 1 3: The Hip

(a) The Hip: Primary osteoarthritis of the hip joint is rare in India while it is commonly seen in the western countries. Secondary osteoarthritis however is seen more frequently old trauma. Perth's disease and avascular necrosis of the femoral head. Traumatic conditions which may develop secondary osteoarthritis include fracture neck of femur, dislocation of the hip and fractures of the acetabulum. The presenting features are progressively increasing pain and limitation of movements. Gradually all the movements of the hip are restricted except in some cases, a good range of flexion may be presented for quite some time.

(b) The Knee Joint : Primary osteoarthritis of the knee joint is more common than the secondary osteoarthritis in Indians. It is commonly seen in the middle aged obese female, however, males are not exempted. The presenting complaints are pain, stiffness, limitation of movements and swelling occasionally with clicking sounds. There may be instances of locking of the joint in some advanced cases. On examination there may be synovial thickening with effusion and crepitations are felt on movements. There may be some flexion deformity of the knee joint with limitations of one or more compartments of the knee joint i.e., medial, lateral or patello femoral compartments. When the medial compartment of the knee joint is predominantly involved genu varum deformity results.

(c) The Ankle Joint :—Osteoarthritis of the ankle joint is rare and is usually secondary to some old trauma or disease. The surgical treatment includes either is arthrodesis or total joint replacement.

(d) The Foot :— Osteoarthritis of the joints of the big toe are seen occasionally and are discussed under Hallux valgus and Hallux rigidus osteoarthritis of subtalar joint

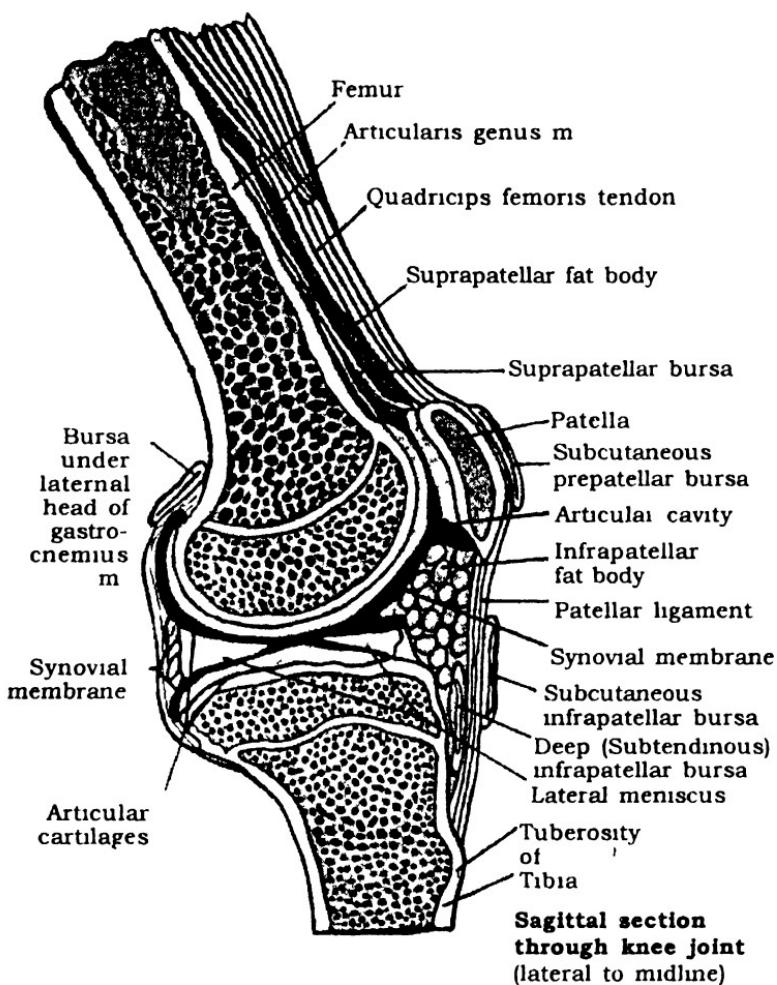


Fig 14 Knee Sagittal Views

secondary to an old fracture of the calcaneum.' A severely disorganised painful joint may need arthodesis of the subtala joint for relief of pain.

(e) The Wrist And Hand :— Osteoarthritis of the wrist is usually secondary to trauma (fracture scaphoid or fracture dislocation or other carpal bones) or avascular

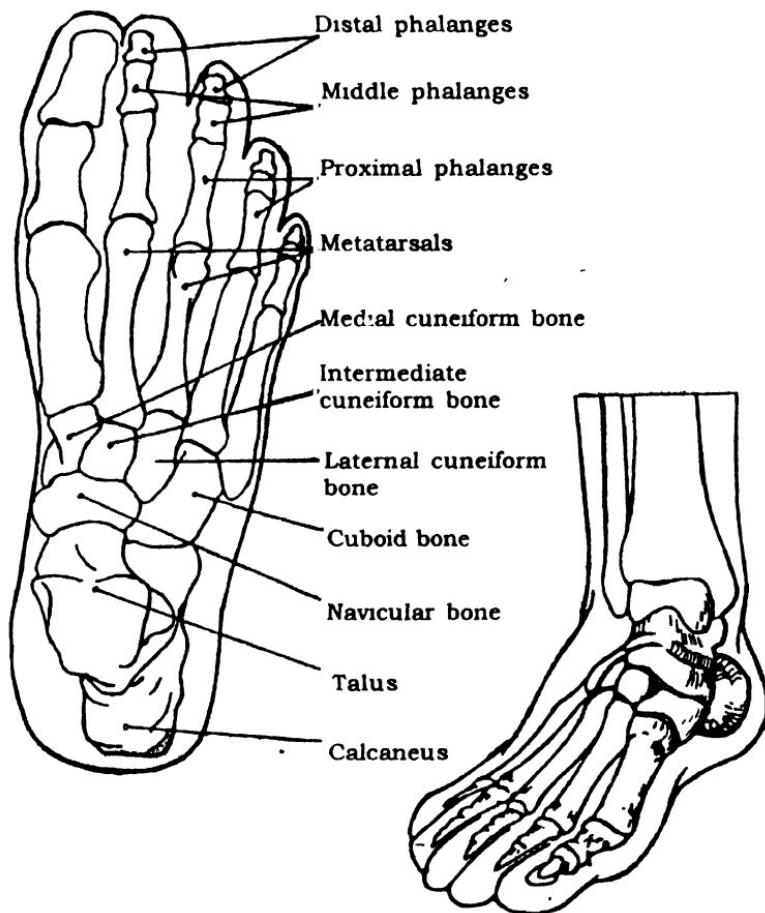
Posteroanterior View**Oblique View**

Fig. 1.5: The Foot

necrosis of lunate. Pain and stiffness of the wrist are the presenting symptoms.

(f) The Shoulder :— Osteoarthritis of the shoulder is rare and usually does not need anything more than conservative treatment and yoga asanas. By doing asanas and pranayama exercises this problem will be over.

(g) The Elbow :— Osteoarthritis of the elbow is usually secondary and leads to a stiff joint. Osteoarthritis is neither a condition or relentless progression nor a disease. It is the result of imbalance between the mechanical stresses on joint and the ability of the tissues to withstand them. Yoga can play a vital role in the prevention of the painful symptoms of osteoarthritis affects the interphalangcal joints of the hand. The distal inter phalangeal are commonly involved initially but proximal interphalangeal joints may get involved later on. Initially pain in these hands is minimal. However, further constant use precipitates inflammatory reaction with increase in pain and decreased function of the hand. Inflammation may end up into a cystic swelling containing gelatinous material which is extremely painful and may even burst.

2. Rheumatoid Arthritis (RA)

Various factors like climate, race diet, psychosomatic disorder trauma, endocrine dysfunction biochemical, hereditary influences, disturbances in the autoimmunity and infection have been found to initiate the rheumatoid process. The onset of the disease is common between the age group of 35 and 55 years and women are affected more than men in a ratio of 3:1. The disease involves several organs and tissues with various systematic manifestations. Involvement of the synovial tissue is present in majority of the cases, involvement of the synovial lining of tendons, sheaths, bursae, and ligaments give rise to pain, swelling and stiffness. Tense synovial effusion and thickening may provoke capsular

ruptures or joint herniation. The involvement of articular surfaces of the joints and its surrounding soft tissue produces cardinal joint symptoms which eventually are responsible for the crippling disorganisation of the concerned joint.

Criteria for the diagnosis of rheumatoid arthritis:—

1. Morning stiffness.
2. Pain on motion or tenderness in at least one joint.
3. Swelling on one joint either due to soft tissues or effusion of both.
4. Swelling of at least one other joint with an interval free of symptoms no longer than three months.
5. Symmetrical joint swelling (same joint).
6. Typical radiographic changes which must include demineralisation in particular bone as an index of inflammation.
7. Positive test for rheumatoid factor in serum.
8. Synovial fluid showing poor mucin clot formation when added to dilute acetic acid.

Inflammation of the synovial membrane spreads to articular cartilage and other soft tissues. There occurs limitation of joint movements with pain and muscle spasm. Granulation tissue formation occurs. Within the synovial membrane and spreads to the particular tissues. The cartilage starts disintegrating and the joint is filled with granulation tissue. There occurs thickening of the joint capsule, tendons and other sheaths impairing the joint movements permanently. The granulation tissue gets organised into fibrous tissue with adhesion formation between the tendons, joint capsule and the articular surface. The articular surfaces get partly covered by cartilage and partly by fibrous

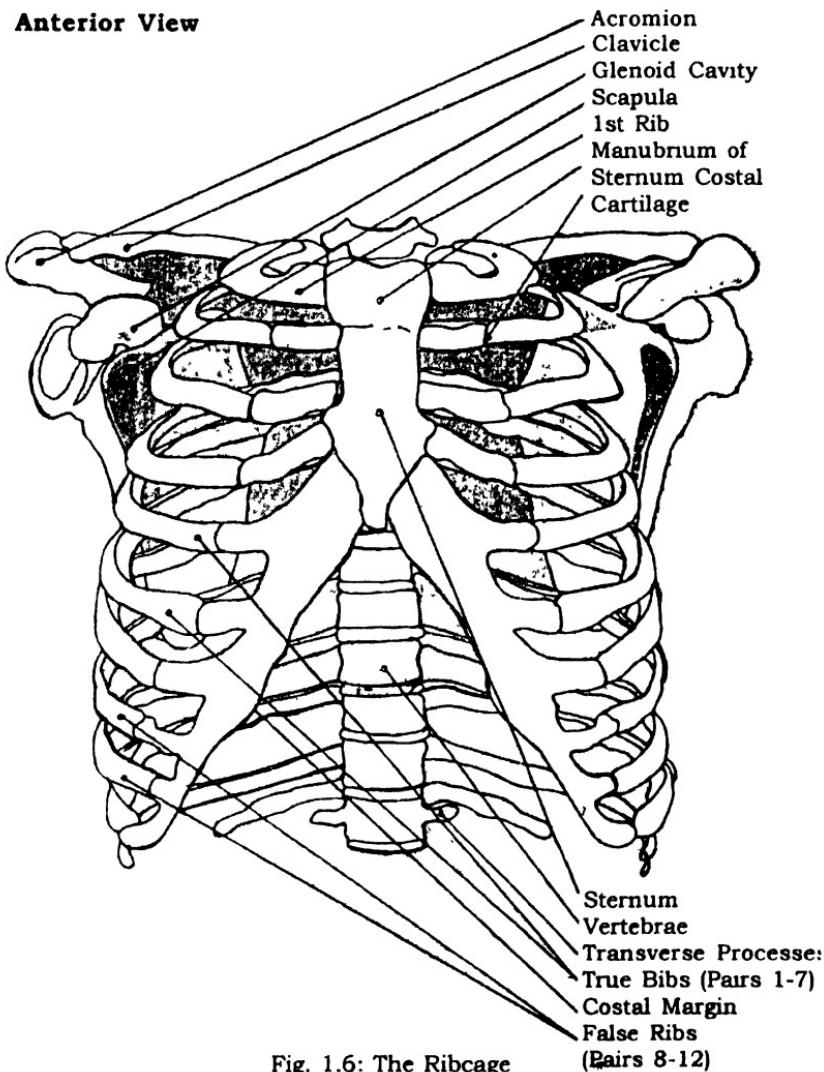
Anterior View

Fig. 1.6: The Ribcage

tissue. They may give rise to contractures and even ankylosis of the joint or secondary osteoarthritis. In such a disease yoga therapy particularly yogasanas and pranayama exercises give relief of pain and inflammation. They also prevent any deformity and can correct any deformity they can also restore and maintain

the joint motion and improve muscle strength and endurance.

3. Juvenile Arthritis

There are various types of arthritis which may affect children upto the age of 16 years.

(a) A servopositive juvenile rheumatoid arthritis :— it follows all the typical characters of the adult form of rheumatoid arthritis. It is found to be common among the girls between the age groups of 8 and 16 years. The prognosis of this condition is bad and the child usually becomes crippled.

(b) Arthritis which is secondary to psoriasis :— Inflammatory bowel's disease like ulcerative colitus or cron's disease.

(c) Ankylosing Spondylitis :— A servo-negative arthritis with sacro-ilitis is common in boys between the ages of 12-16 years. At later age, it leads to the typical changes of ankylosing spondulitis.

(d) Diffuse Connective Disease :— This includes various conditions like systemic lupus erthematosos (SLE).

(e) Infection :— Chronic infections like tuberculosis including common viral infection may precipitate arthritis of this type.

4. Still's Disease

This is a juvenile chronic polyarthritis which could be 1. systemic, 2. polyarticular, 3. oligoarticular. In the systemic disease, malaise weight loss and evening rise of temperature are present with enlargement of spleen and lymph glands. Rashes appear with fever or following the use of external heat. Polyarticular involvement develops into a chronic arthritis. The disease has a better prognosis when it affects fewer joints. An accompanying eye disease (indo. cyclitis) may lead to blindness. Since in these diseases lack of movement may lead to over all

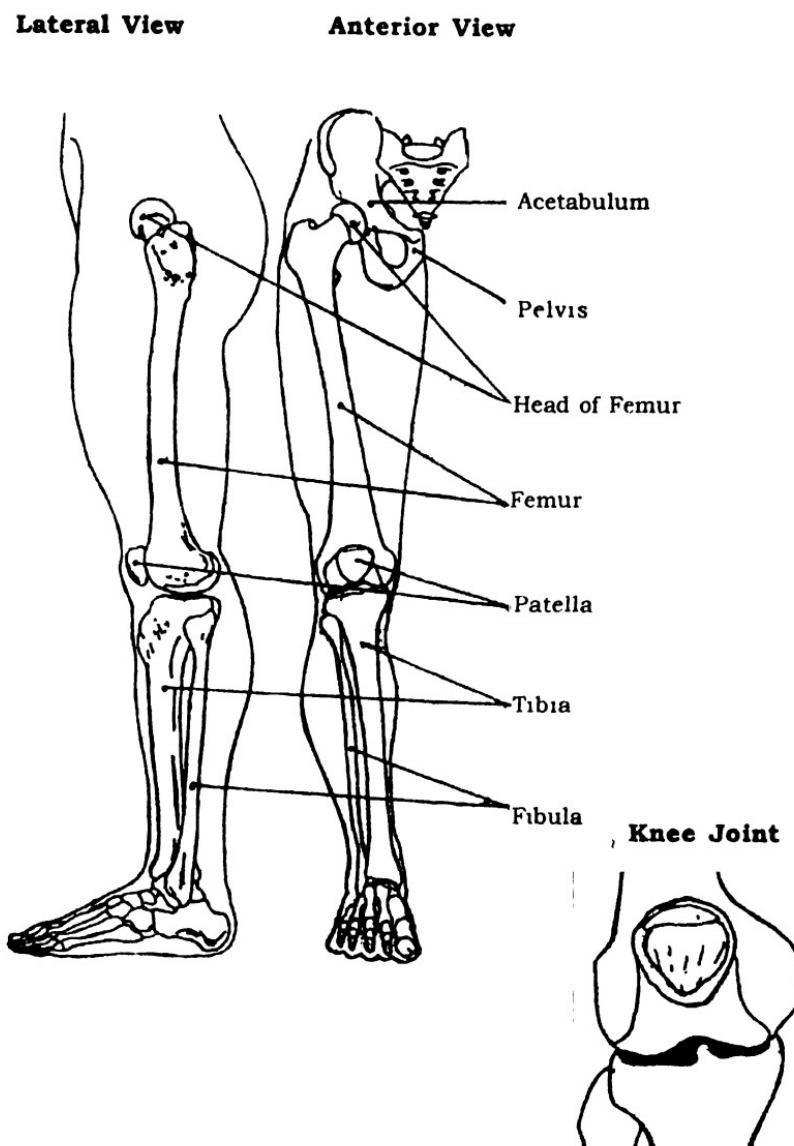


Fig. 1.7: The Leg

retardation. Therefore yogasanas and pranayama are essential for preventing deformities.



Fig. 1.8: Ankylosis of the knee resulting in fixed flexion deformally as a late sequiae of haemophilia.

5. Haemophilia

Haemophilia is a bleeding disorder which is caused by deficiency of an anti-haemophilic glubin resulting in insufficient coagulation. The coagulation time may be increased upto 60 minutes, as against the normal range of 4 to 6 minutes. This disease is transmitted as a sex-linked character by females but manifested only in males. Another bleeding disorder known as christmas

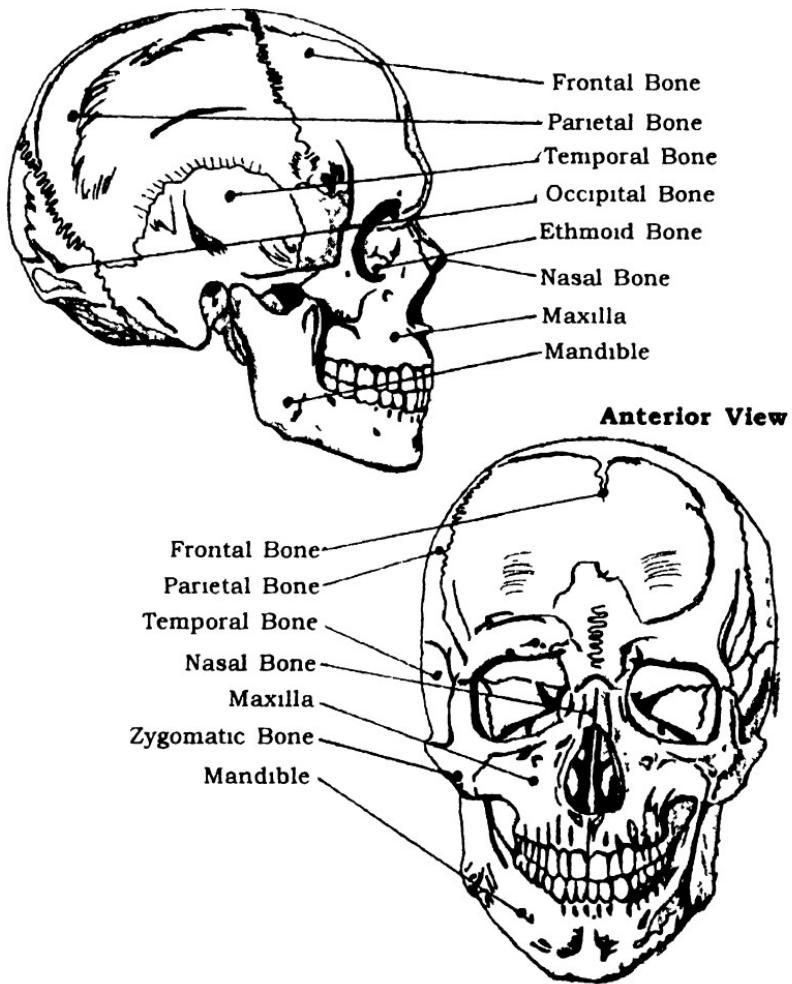
Lateral View

Fig. 1.9: The Skull

disease results from deficiency of plasma thromboplastin component. Bleeding occurs into joints and muscle. The commonly involved joints are knee, elbow and ankles.

Whereas hip, shoulder, wrist, foot and hand are less frequently involved. Haemophilic arthropathy results from repeated attacks of bleeding into the muscle following a trivial trauma or even intramuscular injection. The muscle of thigh and buttocks are the usual targets of bleeding. Initially there occurs a clot formation with protective muscle spasm resulting in a flexion deformity of the hip or equinus at the ankle. This is later on followed by fibrosis and features of compartmental syndrome.

Intramuscular bleed may also cause compression over peripheral nerves. The common example is involvement of femoral nerve in a thigh bleed. The main symptoms of this disease are pain, haemorrhage, swelling, muscle atrophy, creptis, flexion contracture and joint instability. By doing yogasanas, the pain can be decreased further hemarthrosis can be prevented and period of immobilisation can be reduced. By restoring muscular strength and range of motion deformity and cripping can be reduced. Asanas lay stress on the strengthening of the muscles around the affected joint to provide joint protection.

6. Ankylosing Spondylitis

It is a chronic inflammatory disorder affecting primarily the spine and sacro-iliac joints and secondly the other major joints (hip, knee, shoulder etc.) in the body. It is more common in males (male female ratio 9:1) the age of onset being 16-20 years. The exact cause of this disease is not known. However, genetic predisposition has been observed. It is sometimes associated with urethritis, ulcerative colitis and conjunctivitis. The disease has an insidious start with

intermittent backache. The patient has stiffness of the back which is worst in the morning and progresses the whole day. Occasionally the pain may radiate to the lower limbs stimulating a disc lesion. The stiffness of the back increases progressively affecting whole of the spine. The other peripheral joints can also become stiff gradually.

Yogasanas play an important role in the management of this disease throughout its whole course, more so in the initial stages. Asanas like Salabasena, Bhujangasana, Sarvagasana, Pawanmuktasana help in maintaining the mobility of the spine as well as other joints. Pranayama exercises are important to maintain the chest expansion and increases the respiratory capacity.

7. Other Forms of Spondylo Arthropathy

The other forms of spondylo arthropathy are :—

- (a) Psoriatic arthritis.
- (b) Reiter's syndrome.
- (c) Reactive Arthritis
- (d) Enteropathic Arthritis.

The psoriatic arthritis is associated with skin lesions. Reiter's syndrome may have urethritis halanitis, skin lesions, conjunctivitis and oral ulcerations.

Besides all these characteristic symptoms, arthritis is common to all these conditions. Arthritis presents in two forms (1) peripheral when there is an involvement of peripheral joints. It may be morw-arthritis. (2) It may be axial arthritis resembling ankylosing spondylitis.

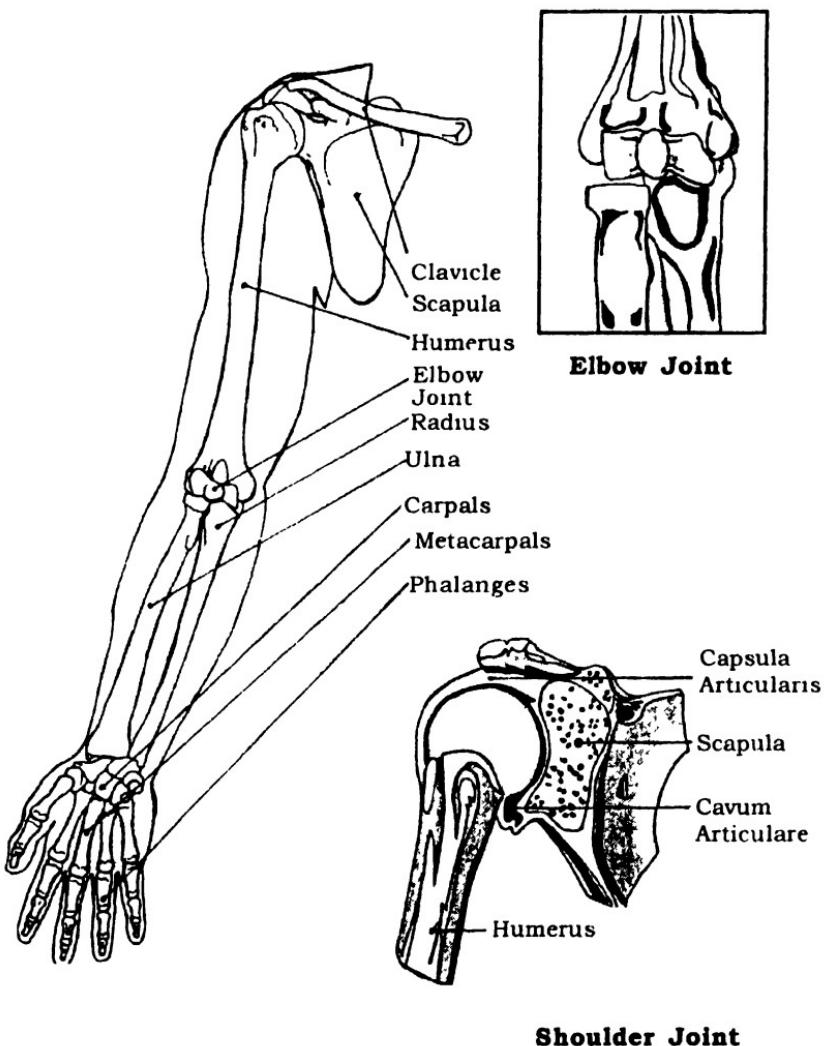
Anterior View

Fig. 1.10: The Arm

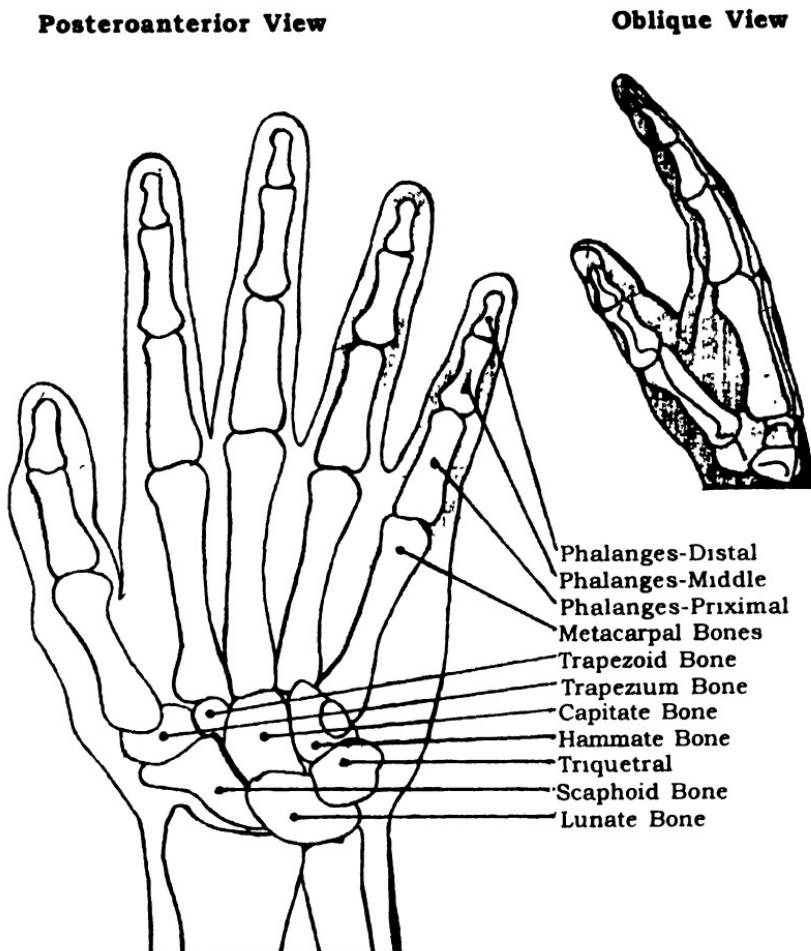


Fig. 1.11: The Hand

8. Gout

Excessive concentration of uric acid and some purine bodies in blood precipitate gout. The kidney is unable to separate the combination of uric acid and purine bodies. The uric acid salts mainly affect the joints, but

other constitutional disturbances may also accompany. The disease is commonly seen in the first metatarsophalangeal and metacarpophalangeal joints in men over the age of 40 years.

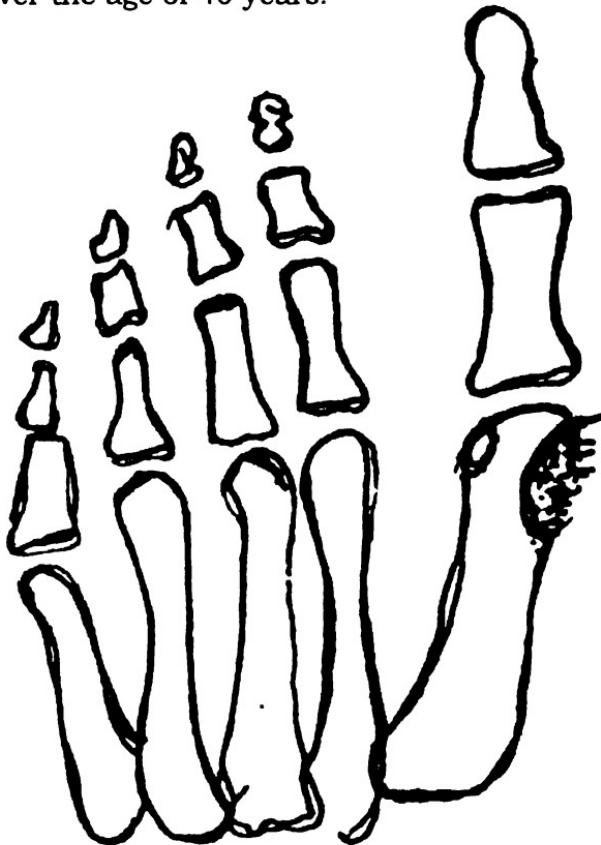


Fig. 1.12: Cystic and erosive changes at the first metatarsophalangeal joint following gout

The deposits of biurate of soda occur around the affected joint. The joint changes include subchondral cysts. Osteophyte formation and in the late stages, reduction in the joint space. During an acute phase, the involved joint has signs and symptoms of acute inflammation with a hard and tender nodule known as

"Chalk Stones" or "tophi". Fever often accompanies exacerbating night pain but the involved joint is comparatively painfree during the night. Pseudo-gout is usually present in the older age group and affects knee and wrist joints. It can be polyarticular with an evidence of calcification of the cartilage. There is deposition of calcium pyrophosphate crystals. The signs and symptoms resemble acute arthritis.

9. The Connective Tissue Diseases

The major connective tissue diseases are :—

- (a) Systemic lupus erythematosus (SLE).
- (b) Systemic sclerosis.
- (c) Dermatomyositis.
- (d) Mixed Connective Tissue Disease (MCTD).

(a) Systemic lupus erythematosus :—It is a complicated symptomatology various antibodies like anti-nuclear antibody may be present. Usually young females are affected by this disease skin lesions are widespread including the butterfly rash. Joint changes like rheumatoid arthritis may occur. The lesions may affect lungs, pleura. In such diseases, yogasanas can improve muscular weakness and prevent deformities.

(b) Systemic Sclerosis :— Raynaud's phenomenon with skin adherence over the dorsum of the fingers is a marked feature. Tightening of the skin around eyes, nose and diminished oral aperture may result. The kidneys may be involved resulting in hypertension. .

(C) Dermatomyositis :— Skin rashes resembling SLE may occur but are often associated with oedema over the eyelids. Erythema may occur over knuckles and nail folds. Inflammatory changes occur in muscles with weakness of proximal limb muscle groups. Calicic lesions may occur in skin, muscles, tongue, and even brain.

(d) Mixed Connective Tissue Diseases :— The symptoms of all the three first varieties of connective tissue disease are present. Inflammation occurs in the arteries. This results in chaemia of the end organ. Skin lesions and renal complications may be present. Pain and stiffness of the neck and shoulder in the morning with tenderness are common. Synovitis may occur in hands and knees.

10. Charcoat's Joint

It is a neuropathic joint that occurs in syphilis (acquired or inherited) and is characterised by gross disorganisation of major joints of the body. The knee, ankle, hip or shoulder joints are commonly affected and other smaller joints are rarely affected. There occurs rapidly progressive painless disorganisation of the affected joint. There may be signs of ataxia and trophic ulcers over the sole of foot. In this disease, maintenance of the optimal function of the muscles and joints is important. This can be done adequately and effectively with yogasanas.

11. Traumatic Arthritis

Trauma to joints can produce injuries ranging from simple spains-small tears in ligaments and tendons caused by violent overstretching—to serious, mechanical derangements of intra-articular structures and fractures of bones extending within the joint capsule. More serious disabilities may require operation for the repair or removal of damaged structures or for the pinning of broken bones.

12. Neurogenic Arthritis

A very destructive disorder of joints can result from diseases or injuries of the tracts in the spinal cord and peripheral nerves that carry sensory stimuli from the extremities. Probably these disruptive lesions represent

an exaggerated form of combined degenerative joint disease and traumatic arthritis occurring in joints made prone to repeated injury by lack of pain sense.

13. Neoplasms of Joints

Neoplasms of joints may be benign and produce symptoms merely by their local encroachment on space, or they may be malignant and capable of sending cancerous metastases to other parts of the body. Neither type is common. Benign tumours may or may not require removal depending on their size, location and significance of symptoms. Malignant tumours always demand prompt surgical treatment.

14. Collagen Diseases

The so called collagen diseases comprise a group of usually serious illness involving connective tissues in blood vessels widely spread throughout the body in synovial membrane, skin and internal organs.

Rheumatoid arthritis and rheumatic fever also are commonly considered to belong to this group. Transient or more chronic arthritis is common, and many patients show features that overlap those of rheumatoid arthritis. In the past these diseases were thought to be fatal. But it is recognised that they may frequently run a benign course and that even in severe cases many patients show great improvement especially since the introduction of cortico steroid drugs.

15. Deformity

Deformity is the malformation of the body. The malformation may be the result of bony distortion or alterations in the topography of soft tissues. The deformity could lead to an impairment or even loss of function along with cosmetic disfigurement. The deformity may be of two types (1) Congenital (2) Acquired congenital deformity is incorrect position in the uterus, failure to develop normally or abnormal development

due to a combination of genetic and environmental factors. The congenital deformity may or may not be hereditary.

Acquired deformity is the deformity which was not present at birth. It can be produced as a result of the following causes :—

(a) Bone Disease :— Disease like Tuberculosis, carcinoma, rickets which directly affect the composition of the bone can produce bony deformity. Chronic infections like osteomyelitis can also cause deformity.

(b) Joint diseases like Arthritis, gout etc.

(c) Muscular causes

1. Muscular paralysis of particular muscle groups with their antagonists produce muscular imbalance which results in deformity.

2. Muscle spasticity. Occasionally spasticity in the muscles result in holding the limb or its component in malposition. This in due course becomes organised into a deformity.

3. A disease like muscular dystrophy does produce deformity in due course. ·

4. Shortening of contractures of the muscle may occur due to various causes and result in a deformity.

5. Trauma :— Malunited fractures can result in a deformity. Epiphyseal injuries in children may lead to premature closure of the growth plates partially or completely, resulting in deformity, scar formation following burns or soft tissue injuries can result in soft tissue contractures and thereby into a deformity.

6. Postural causes :— Long periods of bad habitual postures, lack of correct postural reflex, altered joint mechanics could be the precipitating factors for a deformity.

7. Nerve lesions :— Gross sensory and motor impairment may result following a nerve lesion. Loss of sensations and joint sense may lead to uncontrolled perception to pressures resulting in a deformity or loss of a segment of the limb, e.g., Hansen's disease. A deformity is classified into three grades 1. In the first grade, deformity is mild and can be corrected completely by passive stretching. In the second degree since shortening in the soft tissues prevents full passive correction of the deformity. Attempted passive correction results in pain. Slight degree of bony changes may be present. In the third degree, the deformity is rigid and cannot be corrected by passive manoeuvres.

16. Congenital Deformities

Congenital deformities can be classified into 1. upper extremity, 2. lower extremity, 3. generalised.

Upper Extremity

1. Sprangled shoulder.
2. Radio ulnar synostosis.
3. Madelung's deformity.
4. Radial club hand.
5. Contracted fingers.
6. Syndactyly.
7. Polydactyly.
8. Ectrodactyly.

Spine and Trunk

1. Torticollis.
2. Klippel-Feil Syndrome.
3. Cervical rib.
4. Scoliosis.
5. Spina bifida.

Lower Extremity

- Congenital dislocation of hip (CDH).
- Congenital coxa vara.
- Congenital short femur.
- Congenital talipes equino varus.
- Congenital calcaneo valgus.
- Congenital flat foot.
- Congenital metatarsus adductus.

17. Generalised :—

- Osteogenesis imperfecta.
- Diaphysial aclasis.
- Ollier's disease.
- Achondroplasia.
- Arthrogryposis multiplex congenital.
- Pseudo-hyperthrophic muscular dystrophy.
- Osteopetrosis.
- Gorgoism.
- Cleido-cranial dysostosis.
- Myositis ossificans progressive.
- Familial hypophosphatemia.
- Fanconi's syndrome.
- Neurofibromatosis.
- Gaucher's disease.

Sprangled shoulder :— Sprangled shoulder also called as high scapula is characterised by an abnormally raised scapula on one or both the sides. The causes of this deformity are unknown.

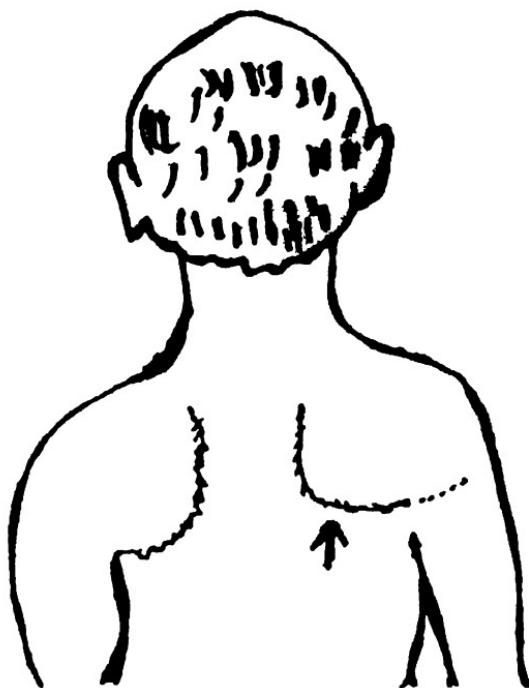


Fig. 1.13: Sprangels shoulder. Abnormal elevation of right scapula on the affected side.

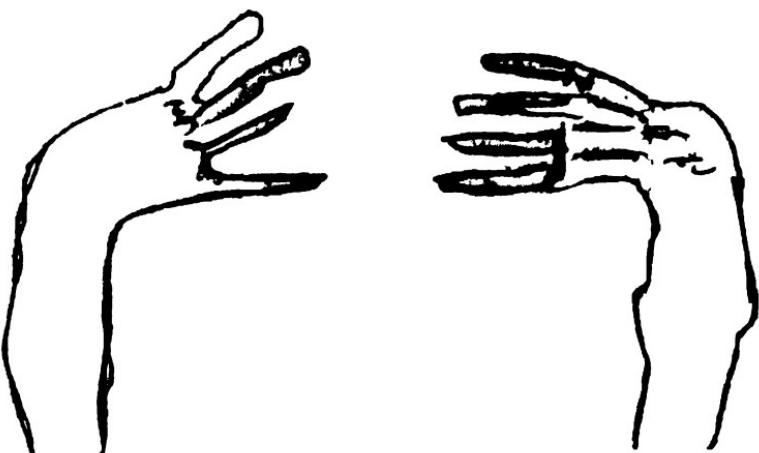
The scapular muscles are poorly developed and may be represented by fibrous bands. It may be accompanied by scoliosis (thoracic curve), with convexity on the involved side. The movement of scapula is marked by limited due to fibrous bands or a bony bar resulting in limitation of shoulder abduction and elevation. In such cases very little improvement can be offered by way of corrective exercises.

Radio-ulnar synostosis :— Radius and ulna are fused at the proximal radio-ulnar joint. There is restriction of the movements of rotation of radius over ulna. This results in functional impairment of arm. When the forearm is fixed in the near range to mid position of

forearm or pronation arm can be effectively used for functional activities by manoeuvring movement at the shoulder, elbow and wrist joints.

Madelung's Deformity :— It is a congenital anomaly associated with defective development of the medial part of the lower radial epiphysis. This results in growth disorders of the medial side of the radius while the outer part of the radius and the ulna continue to grow at normal pace. Subsequently, the radial shaft bows backwards and the lower end of the ulna subluxates backwards. The deformity is usually bilateral commonly seen in adolescent females and presents with weakness of the hand and the waist. The movement of dorsiflexion at the wrist is limited. Occasionally in sever cases supination and pronation are also limited.

Club Hand :— This is distortion of the hand at the wrist from the long axis of forearm. It could be either excessive radial deviation or ulnar deviation depending upon the congenital absence of radius or ulna respectively. The absence of radius is more common and may be associated with absence of thumb. Usually the wrist assumes the position of flexion along with deviation of the radial or ulnaside. The basic problem is the weakness of grasp due to the mechanical disadvantage imposed upon the line of action of the flexor group of muscles. Secondly there is marked soft tissue tightness or contracture on the side of deformity. In mild cases passive stretching of the contracted soft tissues followed by immobilisation in a specially fabricated splint which keeps the hand in overcorrected position. In moderate cases where forcible manipulation under wrenching is planned splint and regular sessions of passive stretching are given. In severe cases where surgery is contemplated stretching exercises will be beneficial.



(A)



(B)

Fig. 1.14: Radial club hand. Excessive radial deviation of wrist due to the absence of radius (A) X-ray (B) Photograph

Contracted Fingers :— Congenital contractures in the ring and little fingers are common. It is due to the contractures in fascia and skin of the fingers. It usually presents as flexion contracture (flexion deformity) at the proximal interphalangeal joint with the extension at the metacarpophalangeal and distal interphalangeal joints. In mild cases, if detected at the early stage the deformity can be corrected by applying finger splint which keeps the fingers straight. The hip joint can easily be stretched to extension by released passive movement. This passive manipulation needs to be done several times and the splint to be applied immediately to retain the correction.

Other Finger Deformities :—

Syndactyly :— There is webbing of two or more digits.

Polydactyly :— The digits are more than five in number.

Ectrodactyly :— Lobster-law appearance of hand with pincer grip.

Torticollis

A developmental defect in one sternomastoid muscle or malposition of the neck in the uterus can give rise to this deformity. The shortening of the sternomastoid is the principal causative factor. There may be an associated shortening of the scaleni, platysma muscles. Incidence is more common in girls, and the side affected is usually left. Occasionally, it may be bilateral. The affected sterno-mastoid may get atrophied and facial asymmetry may occur in untreated cases. The head is fixed in side flexion to the same side, i.e., on the side of the affected muscle while it is rotated to the other side. The shoulder on the affected side is raised. In this deformity exact positioning of the head during sleep is important. The child should be made to sleep on the

opposite side of the lesion and the position of head adjusted by pillow in a maximally corrected posture



Fig. 1.15: Right Torticollis. The shortening of sternomastoid results in the lateral flexion of neck to the contracted side with rotation to the opposite side.

during sleep. This positioning has two advantages. First there is natural relaxation of the muscle and secondly, whatever correction is achieved it is maintained for a longer period during sleep.

Cervical Rib :— The presence of an extra rib is the extension.

Of the costal process of the seventh cervical vertebra. It may give rise to vascular symptoms when it exerts

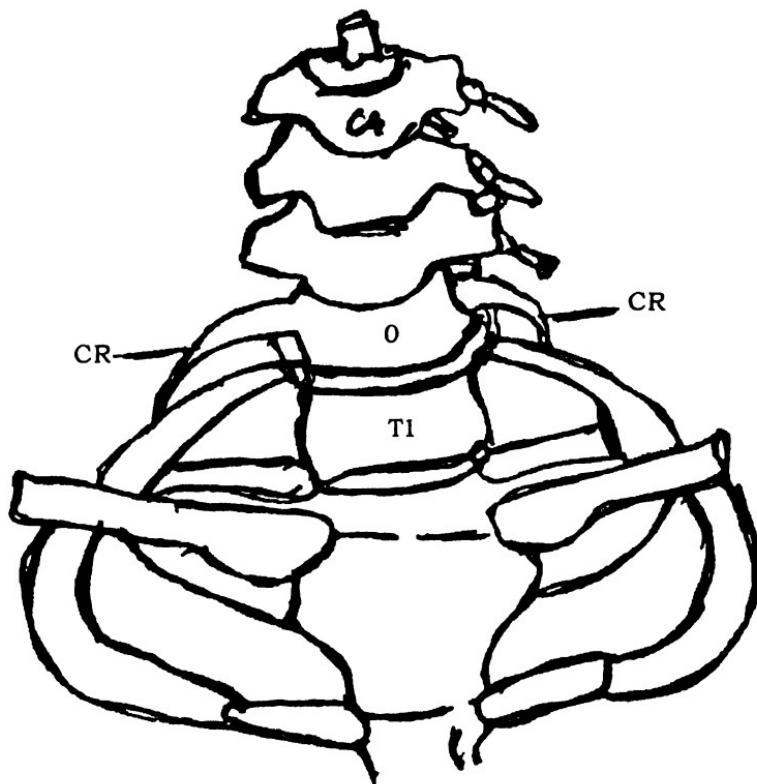


Fig. 1.16: Cervical rib (bilateral). CR: Extra rib at the seventh cervical vertebra.

pressure on the axillary artery. It may press on the brachial plexus giving rise to neurological symptoms like paraesthesia in the hand, hypothenar wasting, atonia in the shoulder girdle muscle with dropping of

shoulder or lower trunk paresis. Sympathetic disturbance with increased sweating in the hand may be present.

Congenital dislocation of the hip (CDH) :— Congenital dislocation of the hip can be because of abnormalities in the bones as well as in the soft tissues. The skeletal anomalies include shallow acetabulum posterior displacement of the head of femur with tendency for flattening change in the neck shaft angle of the femur or excessive anteversion of the neck. All the long muscles crossing the hip joint, e.g., sartorius, rectus femoris, hamstrings, tensor fascia get shortened. Short muscles passing over the hip joint like glutei, obturators. Psoas, are altered in their action. They cannot act effectively as their direction and line of action is altered. They are at mechanical disadvantage and thus fail to act normally.

Congenital coxa-vara :— Congenital coxa-vara may be associated with CDH. There is marked decrease in the angle between the neck and the shaft of femur (90 or less) along with subluxation of the head and distortion of the neck (bending backwards). The greater trochanter is raised. Laxity and great mechanical disadvantage occur to the abductor muscle groups. They become weak and ineffective especially when the weight is borne on the single limb. Abductor muscle group tends to become short and contracted. There is also marked limitation of the passive range of abduction and flexion with excessive extension. There is limitation of external rotation but internal rotation is in excess. The patient stands with the hips in abduction and external rotation and the foot in eversion. In bilateral coxa-vara there is waddling gait with occasional scissoring. In unilateral affections, there is marked limp. The patient drops the pelvis towards the sound side, every time the weight is borne on the affected limb.

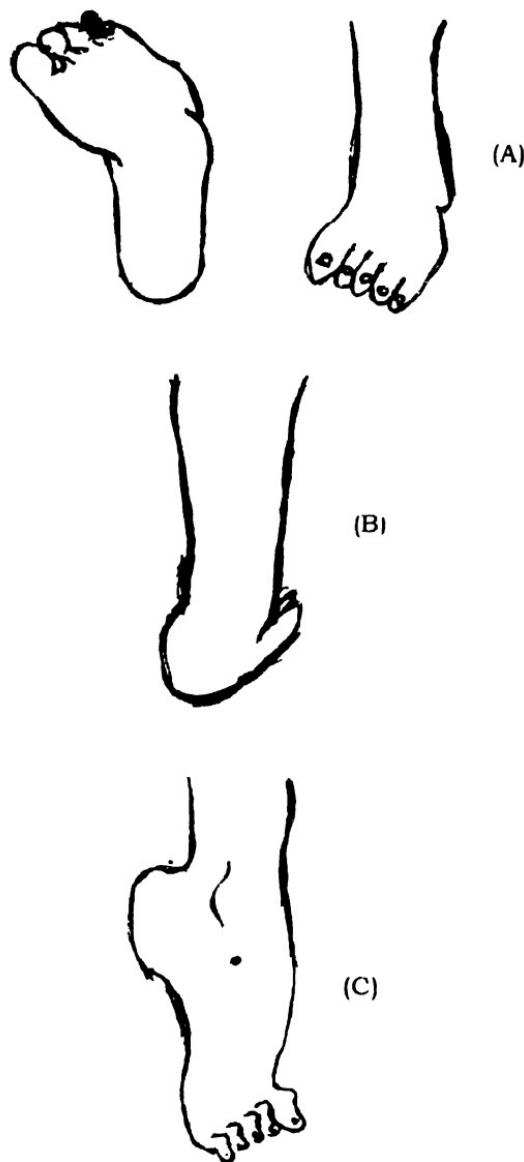


Fig. 1.17: Elements of common congenital talipes equino varus (CTEV).
(A) Adduction and inversion of the forefoot.
(B) Inversion of the heel.
(C) Equinus and cavus with clawing of the toes.

Talipes :— The word “Talipes” means foot. The foot has four basic movements :—

1. Dorsiflexion
2. Plantar flexion At the ankle joint
3. Inversion and Abduction.
4. Eversion and Abduction.

The various deformities of the foot are as :—

- a. Talipes equinus—Ankle and foot in plantar flexion.
- b. Talipes calcaneus—Ankle in dorsiflexion.
- c. Talipes varus—Foot is abducted and inverted.
- d. Talipes valgus—Foot is everted and abducted.

Besides these deformities there can be (a) pesplanus or flat foot where the foot are depressed. Flat foot can be of three types 1. Pesplanus, a foot where there is no dropping of the foot arches. 2. Pes-valgus, there is no dropping of the arches but the foot is everted. 3. Pes-plano valgus, here the combination of dropping of the arches is present along with eversion. These deformities of the ankle and foot present in various degrees, from mild and severe. Mild deformities are easily stretchable or correctable. Severe ones are rigid.

Calcaneo- valgus deformity :— Here the foot is excessively dorsi flexed at the ankle with eversion of the sole.

Strong calf muscles are instrumental in its recovery. Passive over correction is unnecessary spontaneous recovery occurs as the child starts walking. Light aluminium splint may be necessary in some children. Active exercises will be beneficial.

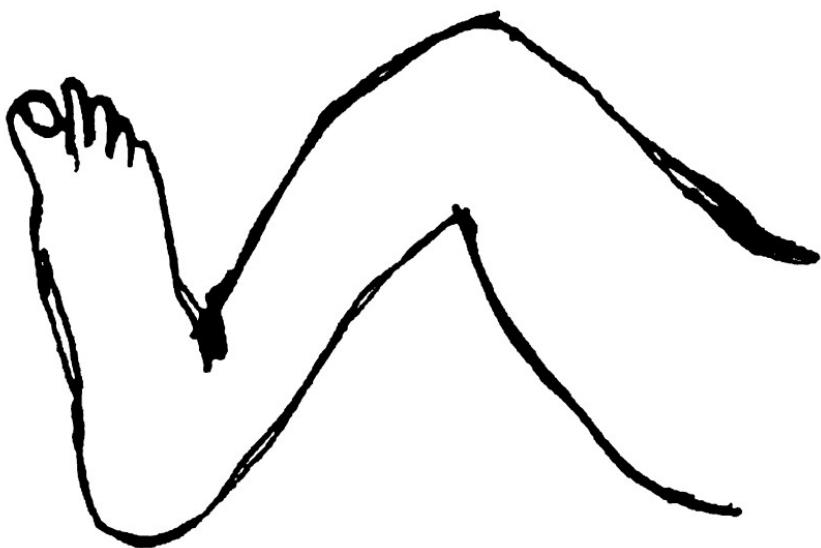


Fig. 1.18: Calcaneo-valgus deformity: note the excessive dorsiflexion and valgus.

Congenital flat foot :— This type of foot has an appearance of a “rocker bottom” deformity. The longitudinal arch is completely obliterated. The sole of the foot is convex downwards with apex at the lateral view shows that the head of talus points almost vertically downwards with upward displacement of the navicular. In the anteroposterior view it points medially toward the other foot at an angle of 65-70 degrees instead of straight forward towards the great toe. There may be associated tightness of the tendo-Achilles.

In the Name of Fashion and Beauty

It is said “Man is born free but everywhere he is in chains”. Modern woman is tied in the chains of fashions. She runs after eye-catching dresses and shoes. Girls put on clothes of latest cuts and designs. Both boys and girls are crazy after fashions. Young boys and girls take

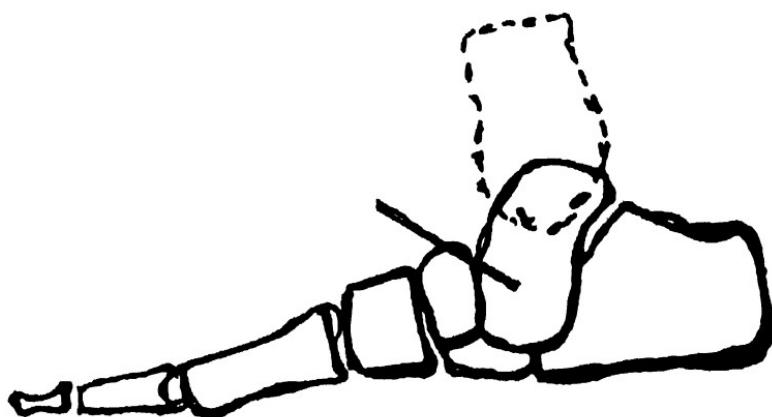


Fig. 1.19: Congenital flat foot with vertical talus (VT)

drugs. They put on unisex dresses. Fashion parades are held in big cities. Foot binding wrinkle erasing, laser burns and toxins corsets cosmetic surgery body piercing women have altered their bodies in the name of beauty. High-heeled shoes are common as well as damaging. This is why podiatrists warn against wearing heels over two inches high. According to podiatrists high heels contribute to knee and back problems, falls, shorten calf muscles and gait irregularities. The high spikes and stacks can cause achilles tendinitis because of shortened tendons, bunions in which the big toe joint becomes misaligned, swollen and tender, and hammertoe in which the big toe contracts into a claw like position and also cause pain in the ball of the foot (metatarsalgia) as well as calluses.



Fig. 1.20: High heels can cause knee, back and foot damage

2

Causes of Arthritis

Since the dawn of human civilisation, man has struggled to live in accordance with his environment. The climatic, dietic and environmental conditions have made man victim of innumerable diseases from time to time. From ancient times man has discovered ways and means to treat and cure physical ailments and mental disorders. In our age of intellectual crisis man has invented wonderful drugs and techniques for the treatment and cure of most dangerous and fatal diseases.

The word arthritis refers to inflammation, pain and stiffness of a joint. Rheumatism another term is used generally for various aches, pains in muscles and joints. The main feature of arthritis is inflammation which is a reaction of the joint tissues to some form of injury or damage. This type of reaction was known even in ancient times. Caleus, a Roman physician of the first century A.D. listed four major signs of inflammation, heat, pain, redness and swelling. In addition there may be loss of function, rise in body temperature, headache, loss of appetite, and general feeling of ill-health.

Although the causes of rheumatoid arthritis remain obscure, progress has been made in identifying the cellular inter actions and chemical mediators which lead to chronic inflammation in joints. It is commonly believed that an infection is the initiating factor. Arthritis

caused by the invasion of bacteria into the joints posed a serious problem before the invention of modern drugs. The phogenic (pus-forming) cocci were the usual bacterial agents which the most common were the gonococcus, prenumoccus, homolytic-stepti coccus, and staphylococcus.

Regarding arthritis the current concepts suggest that the disease results from altered immune reactivity and persistent antigenic stimulation in genetically predisposed persons. There is much evidence for persistent immune overactivity, autoimmunity and the presence of immune complexes at sites of articular and extra-articular lesions namely, 1. increased expression of Dr. antigen by sub-synovial lining cells and dendritic cells. 2. sub-synovial foci of T helper cells in contract with antigen presenting dendritic cells. 3. increased numbers of plasma cells, lymphocytes and monocytes in the synovial membrane associated with local production of rheumatoid factors. 4. the presence of serum factors which inhibit suppressor T lymphocyte activity. Rheumatoid arthritis is considered to be both an extravascular immune complex disease and a disorder of cell-mediated immunity in which the following sequences of events leads to inflammation, granuloma formation and joint destruction.

Diseases like Mycetomia (Madura foot) are fungus diseases characterised by marked swelling with nodulation usually the foot sometimes of the hand. This disease is caused by fungus. Usually the foot is infected through a thorn prick or abrasion.

In rheumatoid or abrasion exact causes are not known. However, two factors are considered
1. predisposing factors are debilitated state, trauma mental shock or stress. Metabolic disorders namely endocrine disturbance and heredity. 2. Exciting factor

may be an infection, occult sepsis in the nose, throat, mouth, gall bladder or in the genito-urinary tract or a state of hypersensitivity of a special type causing an abnormal reaction in the joints.

The osteo—arthritis, called degenerative condition of the articular cartilages mainly of the weight bearing bigger joints, the general health being unimpaired. This is common in males passed middle life (big joints) or in a woman at menopause (fingers) carrying on a strenuous occupation. Injury metabolic disorders and senility predispose.

Regarding periarthritis, the condition is sometimes seen in adults often associated with chronic sepsis as pyorrhea alveolaris, masophary geal infections, chronic bowel diseases, and genito urinary infections, the bacterial toxins circulating in blood are deposited in various places.

Fibrositis, a chronic inflammation of the fibrous tissue of the body may result from causes not well defined but in some it may be focal sepsis causing in addition to periarthritis, panniculitis, teno-synovitis, bursitis, and perineuritis, strain caused by prolonged exertion in faulty postures may be the cause in some cases.

Acne vulgaric appears as indurated papule which may suppurate. It appears chiefly on face, shoulder, back and chest. This is really a proliferation of the sebum, follicles which are later on infected, plugs of sebum blocking the mouths of the follicles may be black and these are the so called "block heads" or comedones. This is the second stage of seborrhie state appearing primarily at puberty in persons with too little exercise and excess amount of fat or carbohydrate in the diet. It has been found that when antrogens are relatively more than aestrogens in the blood they stimulate sebum glands proliferation, this results in acne. Bacteria from the

septic foci such as strepto, or staphylocci, very rarely blood borne tubercle bacilli may affect the glands to produce acne. Bromide or iodide intake or working with tars and mineral oils can also produce acne. Normally these disappear after teen age.

Various causes can be attributed to gout and hyper uricaemia. Various genetic and environmental factors lead to gout by decreasing the excretion of the uric acid or increasing its production. Diminished renal exertion of uric acid is the problem in more than 60% of patients with gout. In most of these there appears to be unidentified genetically determined defect in fractional urate excretion. Increased production of uric acid is at least partly responsible for hyper uricaemia in 25% of gout patients. In the absence of significance renal impairment such patients are hyperexcretors of uric acid.

Osteoarthritis Arthrosis (OA) on degenerative joint disease is not a single disease. Rather it is the end-result of variety of patterns of joint failure. To a greater or lesser extent it is always characterised by both degeneration of articular cartilage and simultaneous proliferation of new bone, cartilage or connective tissue. Radiological survey shows a steady rise in degenerative changes in joints from the age of 40. By the age of 65, 80% of people have osteoarthritis. Males and females are both affected but OA is more generalised and more sever in older women. OA of the hips is much more frequent in caucasians, cold, damp climates are associated with more symptoms developmental abnormalities are believed to be major cause of OA of the hip in majority of cases. In alkaptonuria (Ochronosis) the genetically determined defect of homogentisic acid oxidase results in the accumulation of pigmented polymer that binds to collagens and cartilage rendering it brittle and prone to mechanical degradation. Pagets

disease, gaucher's disease and the various diseases associated with aseptic necrosis result in pathological changes in subchondrial bone with consequent altered stresses on the overlying articular cartilage.

3

What is Yoga?

There are some misconceptions in regard to Yoga. Prevalent especially among some sections in the west. Yoga is not magic or a feat of any kind, physical or mental. It is neither "drill" nor "frill". Yoga is subjective science based on a sound philosophy and deep psychology. Its spiritual mental or physical import cannot be separated from each other. According to Panini, the great Gramarian, the word Yoga is derived from two roots viz yujir and yuja--one referring to yoking (yujir yoga) and the other referring to mental concentration (yuj samadhi) and to sense control. Yoga standing for mental concentration is the theme of the entire Indian system dealing with yoga. It also implies the control of senses. Thus second derivation of the word yoga consists in Citta Vrithinirodha. i.e., the silencing of all activities in the mind's substance.

Vyasa too, in his commentary on Patanjali, takes reintegration (yoga) and identification (samadhi) as synonymous. Shri Gaddadhara, the teacher of logic (Nyaya) says, Reintegration means "identification" (samadhi). The union (samyoga) of some part of one's being with anything. Whatever it may be, of which there is a desire to know the essential nature, even though it be beyond sensory perception through a mind brought under control by an effort to remove its instability is

called "Conscious Identification". "Conscious Identification" is the state of full cognition. This means that in this state the object of contemplation is actually witnessed and the mind is fixed upon it. This is characterized by the silencing of all thought except that of the object contemplated upon. According to vedanta, yoga means supreme realization. Yoga is the reunion of the living self with the supreme self. According to the treatises on yoga, supreme realization is considered as the aim of all yogic practices. But the means of this realization as well as all intermediary stages are also taken to be included in the term yoga. Yoga is thus defined, "The silencing of the mental activities which leads to the complete realization of the intrinsic nature of the supreme person is called Yoga".

According to the Puranas that particular inclination of the mind which is accompanied by an active desire to know the self and which leads to union with supreme is called Yoga. The limits of the physical body can never be transgressed without knowing and mastering the sensory impulses which govern the process of living. The most vital impulses delude us the most, thus safely protecting vital functions from dangerous interferences. That is why the vital instincts and rhythms can only be acted upon and mastered through a very expert technique. It is this technique which is called Yoga.

- Basically, all physical and mental knowledge is an experience. A conception uncooroborated by experience remains a speculation and we can never be certain of its reality. The extent of our knowledge is therefore limited by the greater or lesser extension of our perceptions.

Indian philosophers have asserted that all knowledge is built upon experience. But they maintain that an outward perception only is not a real knowing, and that

the only way for us to know a thing completely, outwardly and inwardly, is to identify ourselves with it. Only when we are one with it, can we know it in itself and not merely as it appears to be. This is the intention behind Yoga which refers to identification.

The Yoga in Man

In recent times, Sri Aurobindo saw a new vision and possibility of advance in spiritual life. He realized that it should and could be possible for human race as such to rise to a new and a higher status of living, a supramental in place of the mental which it now commands, but which is subject to partiality, fragmentaries and division. A supramental status of wholeness, sure of truth, is the development called for and needed in the present situation of human life. This Aurobindo called "Integral Yoga", the yoga which should lift the integral nature of man, by a wide integral process of growth, to a new integral consciousness. In the right view, both of life and of yoga, all life is either consciously or subconsciously a yoga. But all life when we look behind its appearance, is a vast yoga of nature attempting to realise her perfection in an ever-increasing expression of her potentialities and to unite herself with her own divine reality.

Body Context

Yoga does not educate only inner aspect of personality, but it undertakes the education of outer dimensions also. Not only Asanas but Pranayama, Pratyahara and Dhyana play an important role in maintaining the physical health. Through asanas the fat body becomes flexible internal organs are massaged, blood circulation is regulated and the nerves are balanced. Through regular practice of asanas, the secretion of thyroid, parathyroid and endocrine glands are regulated and balanced. Thus most of the common

diseases like Asthma, Arthritis, Diabetes, High Blood Pressure, mental ailments, Heart Ailments, Backaches, and Abdominal Disorders can be cured.

Pranayama and Health

Every part of the body is regulated by the energy supplied by mind and the arteries emerging from spinal chord—the power of the desired flow of energy depends upon the secretion of indocrine glands and this energy is cultivated through blood made available to the glands by the nervous system. The best blood is produced by the life promoting oxygen and nutritional elements which cherish and nourish the body parts. Oxygen through inhalation and nutritional elements are received from the blood but for this all respiratory organs, digestive system and circulatory system are required to be efficient so that continuously produced carbondioxide may be purified and pure blood may remain unaffected from the poisonous gases produced by the undigested food. In Pranayama through "Puraka" and "Racaka" the exercise of stomach and its muscles, liver, intestines and lungs is undertaken so that they all may become stronger. Through pranayama the organs get attuned in such a way that a human being digests a lot more oxygen than his ordinary capacity in a day. Pranayama makes circulatory system regular and thus with the help of pure blood circulation even the unconscious part of the mind also becomes active.

Meditation and Health

Meditation is a great medicine. The meditation influences the thyroid gland. It normalises the oxidising power of body and helps balancing the excessive stimulation produced by the secretion of thyroid hormones. Likewise lethargy, mental inertia produced by the culminated secretion of thyroid hormones are eliminated. Meditation dispels away tensions. During

the process of Dhyana, the activity of the Alpha waves is enhanced and a deep rest is attained. Hence one can save oneself from the badly effected respiration due to mental tension. Similarly the energy likely to be wasted in anxiety and negative thinking may be saved.

The psychology of yoga comprises the functions of the internal organs, and its physics is of the five great objects of "Mahabuttas" (Ether (Akasa). Air (Vayu), Fire (Agni), Water (Apas), and Earth (Prithvi). The philosophy of yoga transcends both these stages of study. The yoga metaphysics holds that the body is not all, and even the five elements are not all. We do not see what is inside the body and also what is within the universe of five elements. Yoga is therefore spiritual, superphysical, or super material because materiality is shed in its achievement and consciousness regions supreme. This is the highest object of yoga, where the individual and the universe do not stand apart as two entities but come together in a fraternal embrace. The purpose of yoga is the union of the deepest within us with the deepest in the cosmos.

The keynote of Hatha Yoga is purification.' If the blood is impure, the brain and nerves and psycho-spiritual life cannot be healthy. A healthy condition of the body does not mean great muscular strength. Professional strong men whose biceps and chest bulge like balloons are often not healthy. At middle age their excess of muscles begin to degenerate and turn to fat and they seldom live to ripe old age. Endurance, purification of blood resistance to disease, the disciplined nerves, alert mind are the main qualities of a good health, Hatha Yoga is the ideal system for attaining harmonious development of body, mind and mental health. The harmonious development of body, mind and soul can be obtained through the eight limbs of yoga.

1. Yama:— (Abstinences) moral conduct, truthfulness, non-covetousness.
2. Niyama:— (Observances) of cleanliness, contentment, self-discipline and self-surrender to God.
3. Asanas:— Right postures.
4. Pranayama:— (breath control) control of prana by regulating breathing processes of inspiration, expiration and retention of breath.
5. Dharna:— (Concentration) fixing the mind on one object at a place or point.
6. Pratyahara:— (Sense withdrawal) turning the senses inward and withdrawing them from external objects.
7. Dhyana:— (Contemplation) or meditation. Keeping the mind exclusively on one object or idea for sometime without any interruption.
8. Samadhi:— (Self-realisation) superconscious experience in trance where enlightenment or union with self takes place.

The first five steps refer to external and the remaining three to internal system of body. Hatha Yoga is a wonderful system of rejuvenation. By practising daily pranayama and yoga asanas, the stiffness of the muscles and joints is checked.

4

Pranayama

Pranayama implies the rhythmical breathing exercises by which lung motions, nerve currents and mind functions are regulated. Different people have given different interpretations of Pranayama. Some say that prana means breath and yama means its control. Others feel that prana means vital force and yama means controlling it. Prana is the cause of nerve currents which are in turn cause of breathing. Different yogis have given different locations of the seat of prana. The technique of pranayama is an attempt to stop all the activities of nerve currents and their leakage. A man who takes to pranayama must observe purity in thought, word and deed. It is essential for success in yoga. Pranayama can be divided into two classes i.e., lower and higher, the former being meant for physical and mental health, and the other for high spiritual attainments. Pranayama is a scientific mental and physical exercise. In this exercise the diaphragm and the abdominal muscles get good exercises by controlled movements. The process of pranayama involves purka (inhaling), kumbhaka (retention) and rochaka (exhaling). Regular and systematic practice of pranayama removes many of the chronic diseases and brings purity of the body, persons suffering from arthritis and rheumatism are required to do following pranayama exercises regularly.

1. Aritak Pranayama

This pranayama awakens the hidden energy within the body. It also brings "psychic awareness".

Technique

Sit in sukhasana or sidhasana and close your eyes. Inhale breath from right nostril and retain breath for a couple of seconds and exhale breath slowly. Breathing should be natural and slow. With the help of breathing prana should travel up and down passing through the seven chakras. Repeat this exercise eight times and relax.

2. Ujjayi Pranayama

Ujjayi pranayama creates heat in the body so it is more beneficial in cold season. It also reduces blood pressure. It keeps the muscles of the throat healthy. Ujjayi induces relaxation very quickly.

Technique

Sit on a folded blanket. Adopt the pose of sukhasana or sidhasana. Close the eyes and the mouth. Inhale slowly through both the nostrils in a slow and rhythmic manner. Retain the breath as long as you can without any stress or strain and exhale through the left nostril by closing the right thumb. Expand the chest when you inhale. This exercise may be practised even when walking or standing. Now you can repeat this exercise with the next nostril. Relax after repeating the exercise 8 times.

3. Bhastrika Pranayama

Bhastrika is also a powerful exercise and should be done under the supervision of a teacher. In this exercise lungs get maximum exercise. This exercise should not be done by those who are suffering from some heart or lung disease. With bhastrika pranayama heat is produced in the body.

Technique

First stage—Sit in sidhasana on a folded blanket. Close the mouth and the eyes, close the right nostril with right thumb and inhale and exhale through the left nostril. The whole process resembles the movement of a bellow of blacksmith. The head or shoulder should not be moved, only the abdomen should be moved due to fast inhalation and exhalation. Do this exercise 10 to 15 times. At the end breathe in and retain the breath for 20 seconds. Then exhale very slowly.

Second Stage—The suryang bhastrika. The same process should be done now through the right nostril, keeping the left nostril closed with the ring finger followed by inside retention of breath for 15 seconds. This exercise should be repeated 10 times.

Final stage—Repeat the same process as above but use both the nostrils. Inhale and exhale rapidly. The last breath should be inhaled and retained inside for 20 seconds. It should be done 10 to 15 times.

4. Semveta Pranayama

This pranayama is practised as a warming up exercise performed first of all for cleansing breath before starting the advanced exercises. It purifies the entire system and fills the body with energy and vitality. It also helps relaxation of mind and body.

Technique

Sit in sukhasana or sidasana on a folded blanket. Close your eyes and mouth. Inhale air with both the nostrils simultaneously. Hold the breath for a few seconds and then exhale with both the nostrils. Both inhalation and exhalation should be done very slowly and comfortably without any jerk or stress. This process should be repeated 15 to 20 times.

5. Sahita Pranayama

Sahita pranayama is an elementary exercise for harnessing the wondering mind. This exercise has also great effect on the psychic nerve channels.

Technique

Sit in any comfortable asan on a folded blanket close your eyes and mouth. Inhale air with both nostrils and retain breath as long as you feel comfortably. Then release the breath with both the nostrils. This completes one round. Repeat it 10 to 15 times and relax.

5

Diet Therapy

"The best doctors in the world are doctor diet, doctor quiet and doctor merryman". Jonathan swift. Food and diet are as old as man. Food and diet are of great importance in the promotion of health and prevention of disease. The yogis of ancient India and the modern medical science have suggested the principles of food and diet which can keep one physically fit, mentally sound and morally high. But due to difference in climate, way of life, conventional food habits, non-availability of some food stuffs. It is difficult to follow the principles of diet prescribed by the dieticians. The words food and nutrition are often confused. Food is composite mixture of various substances. The word nutrition is derived from "nutritions" which means to suckle at the breath. Over-nutrition, under nutrition and wrong nutrition are the causes of most common diseases. Many people eat food too fast, too often, too hot, too cold, too rich and too adulterated. We lack the basic principles of art of eating and proper feeding. All articles of food must be chewed thoroughly before they are swallowed. Then they can be easily digested and absorbed in the system. It is said hunger is the best sauce. We must eat when we are hungry. Even simplest dishes become delicious when taken under the spell of hunger. Food taken under compulsion, threat, worry, anxiety, tension or emotional strain produce indigestion, gas trouble and hyperacidity. In our day to day life we come across

persons who express anger, wrath and resentment over trifles and go upto the extent of throwing away the thalis containing food.

The science of nutrition has made many advances and research particularly on vitamins. As a result of it new concepts like nutritional surveillance and nutritional rehabilitation have been evolved. Despite these advances malnutrition and under nutrition are still prevalent in developing countries. The dietary constituents of the food can be classified into proteins, fats, carbohydrates, vitamins, minerals, and water. The human body is made up of these constituents and has the following approximate compositions :—

Composition of Human Body

Matter	Per cent
Water	63
Protein	17
Fat	12
Minerals	7
Carbohydrates	1

Diet, directly or indirectly influences the mind, balanced diet aims at harmonious development physical, mental, and spiritual. It is nutritious but not rich as some people are inclined to think. A rich diet may produce diseases of the liver, kidneys and pancreas. Balanced diet increases efficiency stamina vim and vigour. Lord Krishna says to Arjun, "Verily, Yoga is not for him who eats too much nor who eateth too little. Yoga killeth all pain for him who is regulated in eating

and amusement, regulated in performing action, regulated in sleeping and waking." Yoga practitioners should avoid all narcotics, alcohol, drugs and smoke that stimulate the senses but are detrimental to health. Balanced diet is "Sattvic" diet and lays stress on fresh, simple, wholesome and nutritious diet. It includes among other things fruits, milk, cheese, wheat, salad, soya beans and green vegetables. In balanced diet, curd, fruits and green vegetables should be consumed generously.

No diet is more important in the care of arthritis patients than balanced diet. Besides water, should be taken in plenty. Water, the elixir of life is a free gift of nature. Drinking water should be safe and wholesome free from pathogenic agents, free from harmful chemical substances. Water should be drunk neither too hot nor too cold. We should avoid drinking water while eating. Water drunk half an hour before and after meals is useful for health. A glass of water on getting up in the morning will wash the organism. It has been observed that those who do not drink enough water suffer from skin trouble and anaemia. Their skin dries and perspiration diminishes. They generally suffer from constipation. Milk and honey have high nutritive value. Both are concentrated sources of nutrients that is protein, energy vitamin and minerals. It is important for the nature and occurrence of uric acid. Cellular material of both plant and animal origin contains nucleoprotein. Glandular organs such as liver, pancreas and kidney are among the richest sources while meats and the embryo or germ of grains and legumes, together with the growing parts of young plants also furnish appreciable amounts. During digestion nucleoproteins are first split into proteins and nucleic acid. Further cleavage of nucleic acid leads to several products, one group of which are the purines. The latter in turn are oxidized to uric acid,

probably by the liver. In addition to the uric acid available from the metabolism of nucleic acid. It has been established that the body can synthesise purines from the simplest carbon and nitrogen compounds such as carbon dioxide acetic acid and glycine. Thus any substance from which these materials originate, fat and protein gives rise to a considerable production of uric acid. Even in the fasting state there is a constant production of uric acid from cellular breakdown. The realisation that uric acid can be formed from simple carbon and nitrogen compounds has considerably minimised the importance of diet in the treatment of arthritis and gout. Persons suffering from arthritis and gout are required to avoid all food high in purines. Pastries rich desserts, cream and ice cream, fried foods, eggs. Skim milk and cottage cheese must be used in ample amounts to provide the necessary protein. An optimum diet with emphasis on the following points is advisable :—

1. The caloric intake is based upon the weight of the patient in relation to the desired weight.
2. A normal or high intake of protein, depending upon the patients state of nutrition is given.
3. Minerals and vitamins must be adequate in every respect.

Degenerative arthritis is a disorder of advancing age. The joint changes seem to be from the wear and tear of living rather from infection or metabolic disturbances. In this disease even a slight degree of overweight is a handicap. A definite reduction in calories is necessary by the use of high fibre digest, either of regular or smooth consistency depending upon the type of constipation. The liberal use of fruits and vegetables assures adequate minerals and vitamins while the daily cup of milk should not be overlooked even by those of advancing years.

6

Exercises For Arthritis

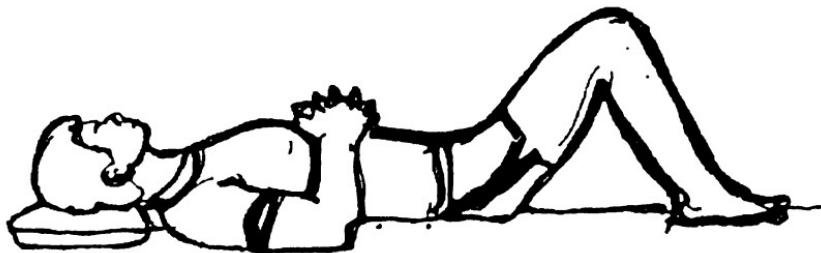


Fig. 6.1

1. (Pelvic Tilt)

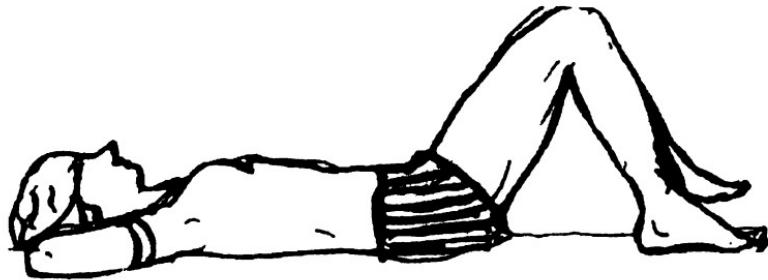


Fig. 6.2

1. Pelvic Tilt

Lie down on folded blanket in resting position, clench buttocks and tilt pelvis up. Feel spine flatten against floor. Hold your breath for a couple of seconds and relax. Repeat the exercise 5 to 10 times.

2. (Pelvic Tilt)

Lie down on a blanket in a resting position, clench buttocks as if for pelvic tilt, use abdominal muscles too and raise your hips from floor. Inhale breath and hold your breath for a couple of seconds and exhale breath slowly. Repeat the exercise 10 times and relax.

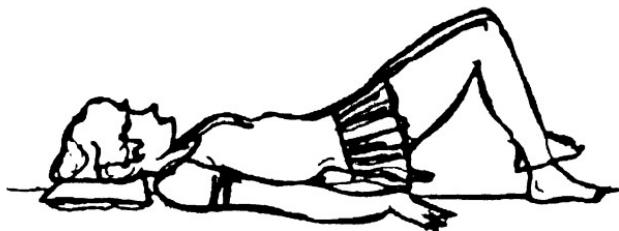


Fig. 6.3

3. (Sits Ups)

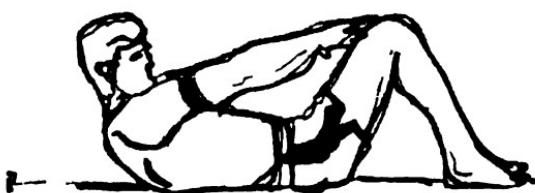
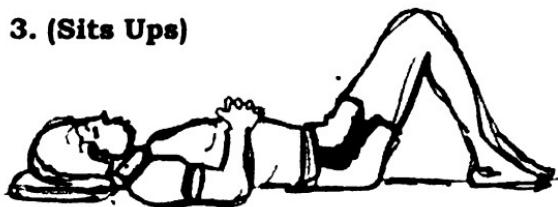


Fig. 6.4

Lie down on a blanket in a resting position. Slowly raise your head, neck and upper body and touch your knees. Keep your middle and bottom of back on floor. Hold your breath for a couple of second and come to the original position. Exhale breath slowly and relax. Repeat this exercise for 10 times.

4. (Hamstring Stretch)

Lie down on a blanket in a resting position. Stretch your right leg flat along floor. Raise it slowly until you feel pain or tightness in back or thigh. Keep the leg straight. Hold it for a couple of seconds. Inhale breath while raising the leg up and hold breath for a couple of seconds. Repeat at least five times each leg and relax. Keeping back flat and arms behind head.

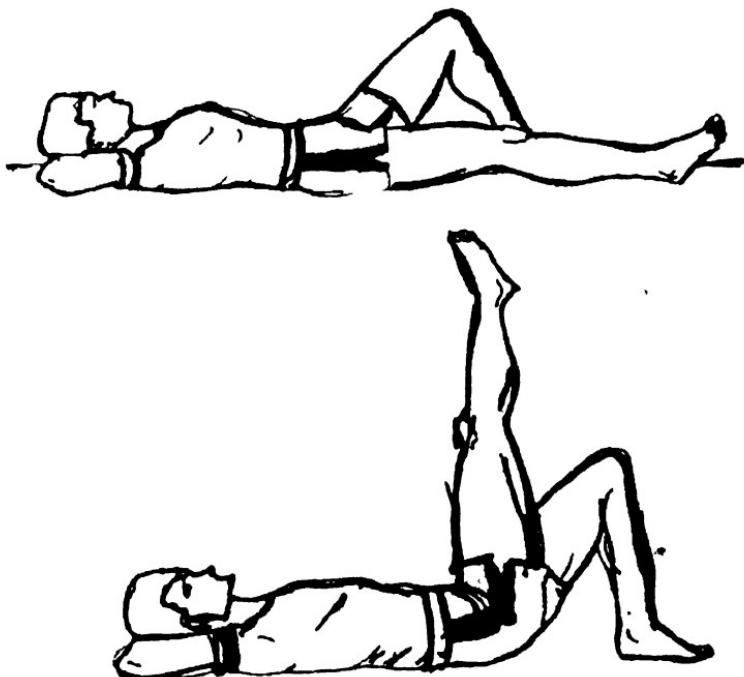


Fig. 6.5

5. (Standing Hamstring Stretch)

Stand erect on a folded blanket. Place heel on low chair. Keep both legs straight. Slowly lean forward and press your knee with both hands. Repeat at least ten times for each leg and relax.

6. (Hip Roll)

Lie flat on a blanket with stretch your arms out at sides. Bend your knees so feet come close to buttocks. Keeping knees together and close to chest. Slowly roll them towards floor. Breathe in and out slowly and rhythmically. Repeat entire exercise ten times and relax.

7

Asanas For Arthritis

The great sage patanjali has defined Asana “Sthiran sukhan asana” (That position which is comfortable and steady).

Asanas are of three types, static, pseudo dynamic and dynamic. Only those asanas are discussed in this chapter which are beneficial for arthritis.

Pure physical exercises have only a physical effect on the muscles and bones, yogasana aims at the harmonious development of body, mind and soul. Different asanas have different effect on the organs of the body. In our body organism, cells, tissues, and glands play an important role. One diseased gland can affect the whole system. The main organs concerning digestive system, the stomach, small intestines, pancreas, and liver are affected by the proper functioning of the abdominal muscles particularly of the diaphragm, which is influenced by the breathing. Due to malfunctioning of the diaphragm and any organ of the digestive system, stomach acid is secreted improperly and indigestion, gas trouble are caused. The brain continues to receive message irrespective of age. These messages store up both pleasant and unpleasant sensations. Yoga aims at expanding our total experience and awareness by re-educating us to receive and acknowledge all the messages that come in from the body, whether they are

painful or pleasurable. Blood circulating plays an important role in carrying blood particles from digestive organs to tissues. Asanas which are beneficial for the digestive system are also beneficial for the body. The asanas which tone up the abdominal organs and the diaphragm help to tone up the whole body.

Pranayama is extremely beneficial to lungs and the proper purification of the blood with the regular practice of asanas, any physical ailment can be nipped in the bud. Normally physical exercises seldom have any direct effect on the proper functioning of the endocrine glands but asanas stimulate and tone up the endocrine glands. Yogasanas are not to be done at random or in accordance with one's whims or fancy. The arthritis patient has to undergo the process of selection and rejection. Every practitioner of asanas must keep in mind some basic important instructions before starting asanas. Asanas must be practised regularly and punctually with faith, determination and tenacity and without any noise. Interruption and distraction. It is much convenient and hygienic to practise asanas in the morning. First washing and cleaning your teeth and mouth, evacuating the bowels. Asanas should not be done with tight dresses or garments on the body. Spectacles, watch rings, belts, brasiers, sandals, boots, should be removed while doing asanas. Asanas should not be done after meals. Asanas may be practised in a quiet, calm, clean and secluded place preferably in a garden with fresh air. In unfair and rainy weather the asanas may be done in an airy room or verandah free from mosquitoes, flies, ants and bugs. The asanas should be practised on a folded blanket or soft carpet or folded rug laid on the floor. During the practice of asanas and pranayama no strain or stress or jerk should be done except in simhasana and vyagra asanas, the eyes and mouth should remain closed during the practice of asanas. The body should remain

active and the mind watchful and free from any unholy thought, care and worry, while doing asanas breathing should be done through nostrils and never through mouth.

Some ladies have often expressed the feeling that they look after their children, family, routine, social and domestic works so they are not in need of yogasanas. There is no doubt about it that our ladies do multifarious jobs in and outside the home. Cooking, washing clothes, grinding spices, attending office, maintaining all household affairs and interior decoration but even then some particular parts of their body do not get enough exercise which is essential. How can they keep the main constituents of the body in proper trim? How can their physical ailments and disorders be prevented and cured? An artificial life, un-natural way of living, faulty food habits and idleness are the causes of many diseases. So it is essential for women also to practice some selected asanas and the pranayama. The aim of asanas is to attain steadiness of body and mind, a feeling of lightness, health, suppleness, and psychophysical poise. For arthritis patients yogasanas evoke feelings of sublimity, inner tranquility psychic strength and purity of consciousness. The asanas cannot be used as substitute for medical treatment. Success in yoga is not obtained by mere theoretical study or reading the sacred texts. Constant practice alone is the secret of its success.

1. Siddhasana (Adepts Pose)

Siddha is Sanskrit means adept. Yogis and Rishis have spoken high of this asana. Great saints and sages like Nityamatta, Niranjana, Kapla, Sabar used to meditate in this asana for hours together.

Technique

Sit on the folded rugged or folded blanket on the floor, bend the left leg and pull the foot in against the groin.



Fig. 7.1: Siddhasana

Now bend the right leg and bring the foot across and insert its outer edge in the crease between the calf and the thigh of the left leg. The right heel should press against the public bone and both knees should touch the floor, keep the palms of the right and left hands on the back in a straight line.

This asana develops mental potentiality, soothes the muscles, tones up the nervous system, increases power of concentration, supplies sufficient blood to the pelvic region and keeps the body in poise and equilibrium.

2. Simhasana (The Lion Pose)

Simha in Sanskrit means lion. This pose appears to be odd, unpleasant but is very much rewarding and rejuvenating. In this asana alone breathing is done

through mouth. This asana is held sacred by the best of yogis.

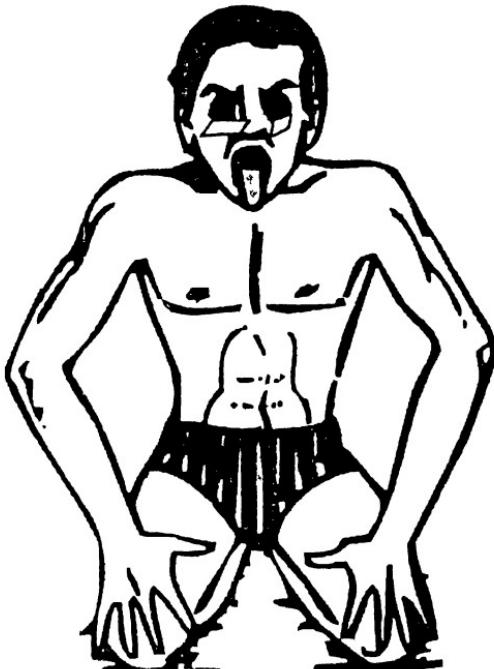


Fig. 7.2: Simhasana

Technique

Sit on a folded blanket with legs stretched straight in front. Raise the seat, bend the right knee and place the right foot under the left buttock, similarly bend the left knee and place it under the right buttock. The left ankle should be kept under the right one. Sit on the heels with toes towards backwards and put the weight of the body on the thighs and knees stretch the trunk forward and keep the back erect. Place the right and left palms on the right and left knees. Open the mouth and eyes wide and protrude the tongue out and down as far as you can. Gaze at the centre of the eye brow or at the tip of the nose. Remain in this pose for a couple of seconds.

This asana will direct the flow of blood to the throat and larynx and will tone up the muscles of the face and throat. This asana is beneficial for thyroid gland. It can also increase the glow of the face and eyes and remove constipation.

3. Vajrasana (The Thunder-Bolt Pose)

Vajara means diamond. As the name suggests this asana makes the body as graceful and strong as diamond. It is the prayer pose of the Muslims and meditative pose of the Budhists. The asana can be done any time. This is the only asana which can be done immediately after taking meals.

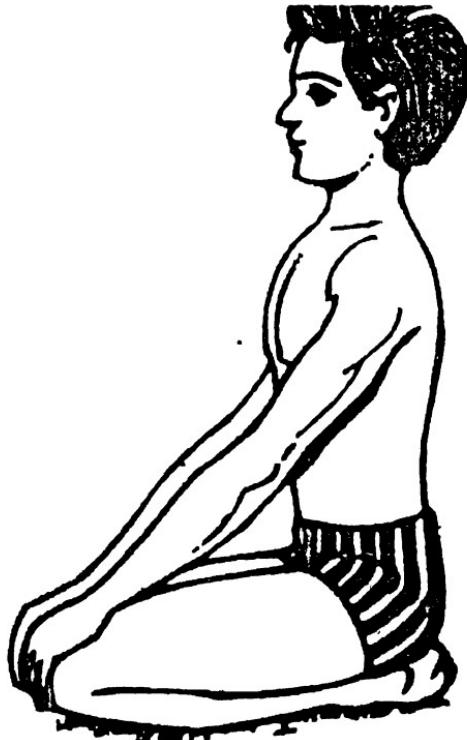


Fig. 7.3: Vajrasan

Technique

Sit on a folded blanket with the feet stretched backward. The knees should be kept together but heels apart. Lower the buttocks inside the feet. The heels should touch the sides of the hips. Place the hands on knees and palms downward.

Benefits

This asana is simple but beneficial. It brings tranquillity to the mind. It also cures disease such as nervousness, indigestion, and urinary diseases. It can also remove head ache, acidity and weakness in the sexual organs and restore hope and self-confidence in man. This asana is very beneficial for a person suffering from arthritis ailments.

4. Parvatasan (The Mountain Pose)

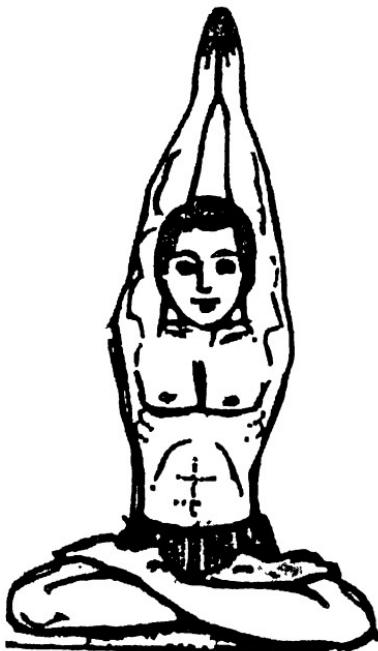


Fig. 7.4: Parvatasan

Technique

Sit on a folded blanket, adopt the pose of siddhasana and gaze on a white spot on the floor. Stretch your hands upwards., and keep the neck, spine in straight line. While raising your hands upwards breathe in and retain breathe for a couple of seconds and while bringing hands down breath out. Do this asan at least ten times.

Benefits

This asan cures nervous debility, arthritis and improves digestion, blood circulation and chronic constipation. It helps in powers of concentration and removing tension.

5. The Bhujangasana (The Cobra Pose)

This asana belongs to the category of sacrum asana. This asana is highly beneficial for persons suffering from backache particularly disc problem. People suffering from hernia, peptic ulcer and intestinal tuber culosis should not do this asana.

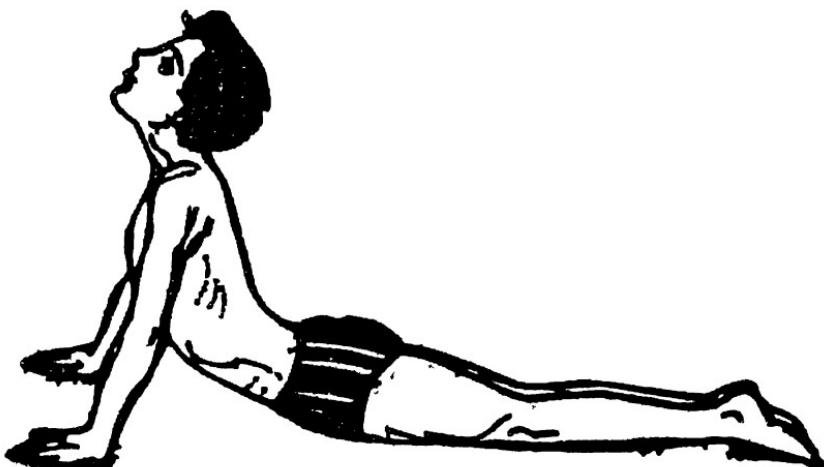


Fig. 7.5: Bhujangasan

Technique

Lie flat on the stomach with legs straight and the feet extended, place the hands, palms down under the shoulders, slowly raise the body above the navel until the arms are straight but the stomach and the legs must touch the floor. Bend the head, back upwards. Remain in this pose for a couple of seconds, breathe in while raising your head, retain breath for a couple of seconds and exhale while putting the head downwards

Benefits

The Bhujangasana is one of the efficacious asanas for the spine and abdomen. It removes unwanted flesh from the hips, makes the spine supple and flexible., and tones up the nervous system and the muscles of the back. This asan also strengthen the adrenal glands.

6. Moola Bandhasan

This asan was held in high esteem by some ancient yogis. This asan is one of the powerful, fascinating asans having many therapeutic uses. Yogis believe that this asan stimulates the body's main nerve centre.

Technique

Adopt a sitting position on a folded blanket. Stretch the legs forward and bend the knees bringing the feet together at the perineum. Breathe slowly and comfortably. Raise the body on the heels, so that the heels press the perineum. When you feel strain in the legs, come to the original position and relax.

Benefits

This asan tones up all the sexual and eliminative organs. It strengthens the muscles of the feet, legs, thighs and makes them supple and elastic. It also tones the reproductive organs and urinary system and enhances the health of the sex glands.



Fig. 7.6: Mool Bandhasan

7. Mandukasana (The Frog Pose)

In Sanskrit Manduka means "Frog". This asana when performed correctly looks like a frog. It is also one of the easiest asanas belonging to the leg feet bending group of asanas.

Technique

On a folded blanket sit in an easy posture, keeping the feet together. Separate the knees as far as you can without any pain, strain or jerk. Keep the big toes of both feet touching. Place the hands on the knees. Remain in this pose for a couple of minutes and breathe slowly.

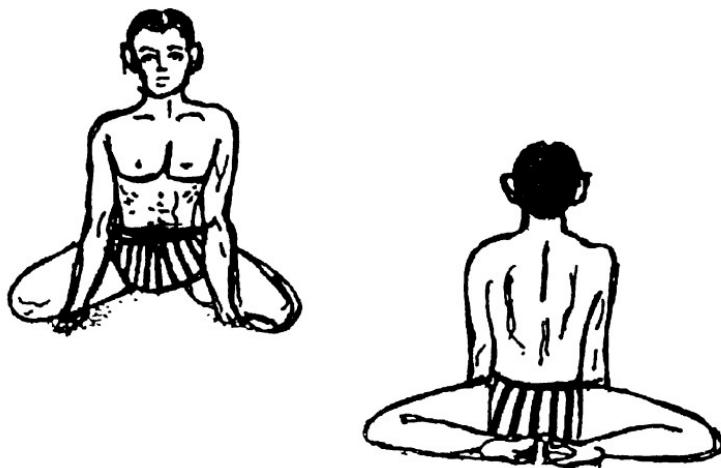


Fig. 7.7: Mandukasan

Benefits

This asana is highly beneficial to legs, knees, joints, pelvis, and perineum. It cures rheumatism, gout, diabetes, arthritis, and piles. It also increases the power of concentration and sharpens memory.

8. Gomukhasana (Face of a Cow Pose)

“Gou” in Sanskrit means “Cow” and mukha a face. This asana is used for meditation, prayer and breath control. The asana when displayed correctly resembles the face of a cow.

Technique

Sit on a folded blanket on the heels, knees together and head, neck and spine straight. Bend the right arm, raise the elbow and lower the hand as far down the middle of the back without disturbing the upright posture. Bend the left arm and bring the left hand up the centre of the back until the fingers of both hands interlock. Breathe deeply, remain in the pose for a couple

of minutes. Unlock the hands and repeat the process in reverse manner. Return to the original position and relax.



Fig 7.8 Gomukhasan

Benefits

This asana cures diabetes, backaches, sexual ailments, insomnia, kidney trouble and rheumatism. It also strengthens and tones up the muscles of the shoulders, upper, back, triceps. This asan also checks the formation of calcium deposits at the shoulder joints.

9. Pawanmuktasana

This asana is performed with both the legs. This asana is very simple but effective. Persons having excess fat in the abdominal region may find it difficult to touch the chest with nose. They should do with one leg only.

Technique

Spread a folded blanket on the floor and lie down straight facing the sky. Inhale and raise both



Fig. 7.9: Pawan Muktsan

the legs up, bend them from the knees and hold them with both the hands and bring them close to the chest. Then raise the head up so that the face remains between the two knees. Exhale and breathe slowly after inhalation hold the breath and bring head, legs and hands to original position and relax.

Benefits

This asana cures gas troubles and backache. It also reduces hyperacidity. This asana strengthens the muscles of the legs and spine.

10. Jeyestikaasana (The Best Pose)

It is more or less the same as advaasana with slight variation. It is also very simple, easy, and comfortable asana and can be performed by anyone irrespective of age, sex, or place.



Fig. 7.10: Jeyestikaasana

Technique

Spread a blanket on the floor and lie down as shown in the figure. Interlock the fingers and place the palms on the back of the head. Breath slowly, deeply and rhythmically. Relax the whole body. After inhalation retain breath for a couple of seconds and exhale breath slowly.

Benefits

This asana tones up the nervous system and the muscles of the neck and the back. It relieves neck pain, shoulder pain, and back pain. It also develops power of concentration and removes headache and migraine.

11. Naukaasana (The Boat Pose)

This asana is one of the simplest asanas belonging to the energy blocking group of asanas. Energy in the form of prana is in every part of the body. It must have free flow, sometimes due to certain impurities of chemical reactions the free flow is blocked resulting in stiffness, rheumatism, and muscular tension.

Technique

Lie flat on the floor facing the sky with hands clasped at the back raise your feet, head and the chest up as to form a curve on the floor, with your body resting on the abdomen. In this pose the body looks like a boat. Breath slowly and rhythmically when the legs and hands are raised, retain breath for a couple of seconds.

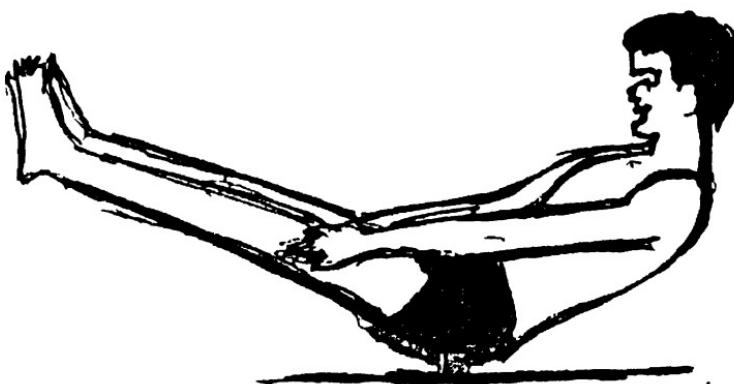


Fig. 7.11: Naukasana

Benefits

This asana eliminates the gas from the abdomen cures belching. It also brings the dislocated navel plexus to its original position. This asana strengthens the muscles of the stomach and the back. It is very efficacious for backache.

12. Sarvang Asana (Shoulder Stand Pose)

In Sanskrit Sarva means all and anga means limb or body. Sarvanga means entire body or all the limbs. By practising this asana all parts of the body are benefited. In this asana, circulation is directed towards thyroid and parathyroid glands which are important for the promotion of health. The mal-functioning of thyroid gland can harm all other glands.

Technique

Spread a blanket on the floor and lie flat on your back. Then slowly raise the legs up lifting the hips. Let the elbows rest on floor. The chin should be firmly pressed against the chest. When the legs are raised breath in. As long as legs are raised breath in the air, retain breath

for a couple of seconds and concentrate on thyroid gland which is at the root of the neck. Return to the original position and relax. When the legs are moved down, breathe out slowly and rhythmically.

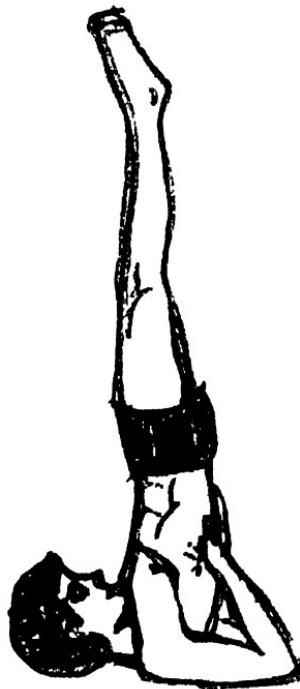


Fig. 7.12: Sarvangasana

Benefits

This asana has number of benefits. It rejuvenates all the organs of the body, strengthens the spine stimulates endocrine glands, tones up the nervous system and improves circulatory system.

13. Garud Asan (The Eagle Pose)

In Sanskrit "Garud" means an eagle. This asana may appear to be difficult for beginners but with regular practice and patience they can do it well.

Technique

On a folded blanket stand erect. Bend the left knee slightly and twist the right leg over the left leg so that the right leg in step is touched behind the left calf. The arms should remain crossed in front of the chest so that



Fig. 7.13: Garudasana

the left elbow rests on the right biceps against the elbow joint and the left is kept above the right tist in front of the face. Remain in this pose for the 20 seconds and breathe slowly. Then repeat the pose balancing on.

Benefits

This asan stretches and strengthens the muscles, tones the nerves, promotes suppleness in the legs, shoulders, digestion and circulation. It reduces the fat from hips and the abdominal region. It also strengthens thyroid, pancreas and adrenal glands.

14. Salabha Asana (The Locust Pose)

In Sanskrit Salabha means locust. In salabha asan the process if reverse of Bhujangasana, the upper body touches the floor. In this asan, inhale breath when the head is raised up, retain breath as long as the head is up and exhale breath when the head is moved down.

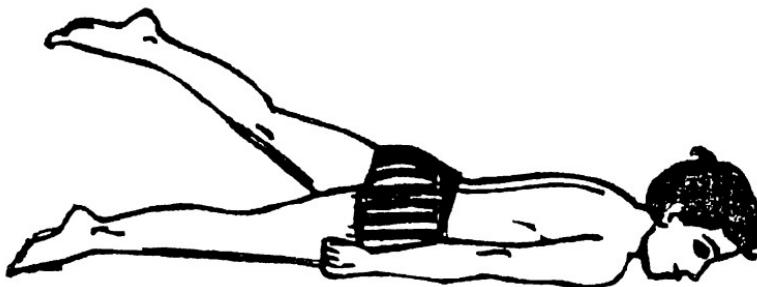


Fig. 7.14: Salabasan

Technique

On a folded blanket on the floor, lie prone on the stomach and chest. The fore head and chin must touch the floor and kept arms alongside the body and legs extended together. Take a deep breath. Clench the fist tightly and raise the legs as high as possible. Without bending them exhale breath and bring the legs slowly to the floor. Remain in this pose for a couple of seconds, and return to the original position and relax.

Benefits

This asana strengthens the muscles of lower back, buttocks, head and lungs. It removes fatty tissues from the waistline, stimulates the abdominal viscera, tones up the liver, pancreas, adrenal glands and kidneys. It is beneficial for persons suffering from diabetes lumbago and insomnia and arthritis.

15. Shav Asana (The Corpse Pose)

This asan is very important, popular and highly powerful asan. In the classic texts, this pose is called shavasana and in "Gheranda Samhita" it is named as Mrityasana. "Shav" and "Mritya" means corpse or dead body. This asana is also called "total relaxation pose" by some western yogis. This asana is very simple but difficult to practise. Today, when the stress and strain of life are increasing rapidly, shavasana is the only asan that provides complete relaxation (mental and physical).

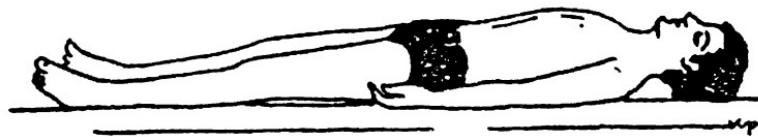


Fig. 7.15: Shavasana

Technique

On a soft carpet or folded rug lie full length on back with arms away from the body and palms facing upward and feet slightly apart, close the eyes and mouth and withdraw the consciousness by stages beginning with the feet, the ankles, the knees, the abdomen, the chest, the neck and the face. Finally keep the mind free. Start breathing slowly, rhythmically. The practitioner should feel that his body is motionless like a dead body. In this asan all tissues, nerves and muscles are to be relaxed. Then retain breath for a couple of seconds, and again have longer breaths. Rhythmic and deep breathing are absolutely necessary for concentration which give complete relaxation.

Benefits

Shavasana is an excellent asan for complete physical, mental and spiritual relaxation. Tension irregular or faulty breathing can cause many diseases. This asan

stimulates the entire nervous system. It also eliminates toxins accumulated in the body, recharges organism with prana, restores energy cures high blood pressure, depression. This asan when performed correctly gives relaxation to body and mind. This asan must be done at the end.

Rest and Relaxation

The world is too much for us. We have become worshippers of Mamon (God of Wealth). Lust for wealth is our aim and object. To earn money by fair means or foul is our main activity. Modern man has become a machine. He has no time and mood to enjoy the sight and sounds of nature—the greatest teacher. Modern man misuses the hours of rest and relaxation. In the words of Norman Vincent Peale "Every night in the United States more than six million sleeping tablets are required to put the American people to sleep". What a pathetic situation. Sleep is a natural restorative process. One would think that any person after a day's work would be able to sleep peacefully, but people have lost the art of sleeping, rest and relaxation.

Survey shows that rheumatoid arthritis is more common in those persons who are usually nervous, tense, worried and depressed. It is said "what cancer is to rose worry is to man". Worries, anxieties and suffering sack the vitality and vigour of man. Sometimes the suppression of feelings sentiments and thoughts—this perennial psychic stress leads to excitation of the hypothalamic region of the brain via the limbic area, causing stimulation of the sympathetic nervous system with the result excessive out pouring of noradrelanine by the sympathetic nerve ending causes severe narrowing of blood capillaries, especially around the small joints of the fingers and hands.

For patients of arthritis too much of exercises and too much of rest are both harmful. Some patients are victims of a mounting tension. They have difficulty in relaxing. Our high strong nervous systems are on a perpetual binge. Caught up as we are in the rush all day, every day we are not living fully. We must remember what Carlyle called, "the calm supremacy of the spirit over its

circumstances". Now how to overcome tensions and stress. Here are simple rules which will help you to relax.

1. Do not get the idea that you carry the world on your shoulders.
2. Do not take your disease or ailment (physical or mental) so seriously.
3. Do not strain so hard. You are not a machine but human being.
4. Love your work. Then it will become a pleasure and not drudgery perhaps you do not need to change your job. Change your self and your attitude and your work will seem different.
5. Do not try to do everything at once. That is why time is spread out, one thing at a time is an old saying.
6. Plan your work and work your plan. Haphazard planning leads to confusion.
7. Adopt righteous means to achieve your goal. Unrighteous means lead to ruin.
8. Have positive thinking and constructive approach in everything ease and difficulty in your work depends upon how you take it and how you think about it.
9. Practice the art of relaxation.
10. Trust in God and do the right.

Yoga is both science and art. It is proven remedy for psychic stress. Regular practice of asanas and pranayama will bring radical change in your body and mind.

The asanas like Advaasan, Jyestikaasana, Shavasan are extremely beneficial for everyone in general and patients of arthritis in particular. They should relax in these postures. The correct technique and benefits of these asanas have been discussed in detail under the chapter asanas. After practicing these asanas the patients of arthritis will experience profound relief and their daily requirements of analgetics and cortisone gradually become less. Moreover these asanas increases the acetylcholine content of the cerebral cortex which ultimately produces tranquillity of the brain. The asans like Vajrasana, Bhujangasana and other asans discussed in the chapter (Asanas) should form an integral part of programme for patients of arthritis.

PART-V

ASTHMA

1

The Respiratory System

Man is a living, pulsing, vibrating being of all functions of his body breathing is of supreme importance. Without food man can live for a couple of days, without water for a couple of hours, but without air man's life will seize within a coupe of minutes or seconds. Majority of the people breathe more or less badly, and their lungs are not properly ventilated, women are suffering from respirator ailments. They, with shrunken necks, pale faces, feel exhausted and nervous. The practitioners of yoga are of the opinion that disorders and ailments are due to polluted environment, irrational or unnatural ways of living, bad habits and lack of wholesome food. In this age of environmental pollution respiratory diseases such as asthma, influenza, cataract, common cold, bronchitis, pneumonia and coryza are increasing in highly industrialised cities.

The smallest animals, like amoebae, get their oxygen directly from their environment, while insects may have millions of microscopic air pipes or tracheoles that deliver air from the outside directly to cells in the middle of the body. Human beings, like other larger and more complicated animals have their oxygen delivered to the body cells indirectly-through the blood. The blood contains a chemical that is part protein and part iron pigment, called haemoglobin. The haemoglobin attracts

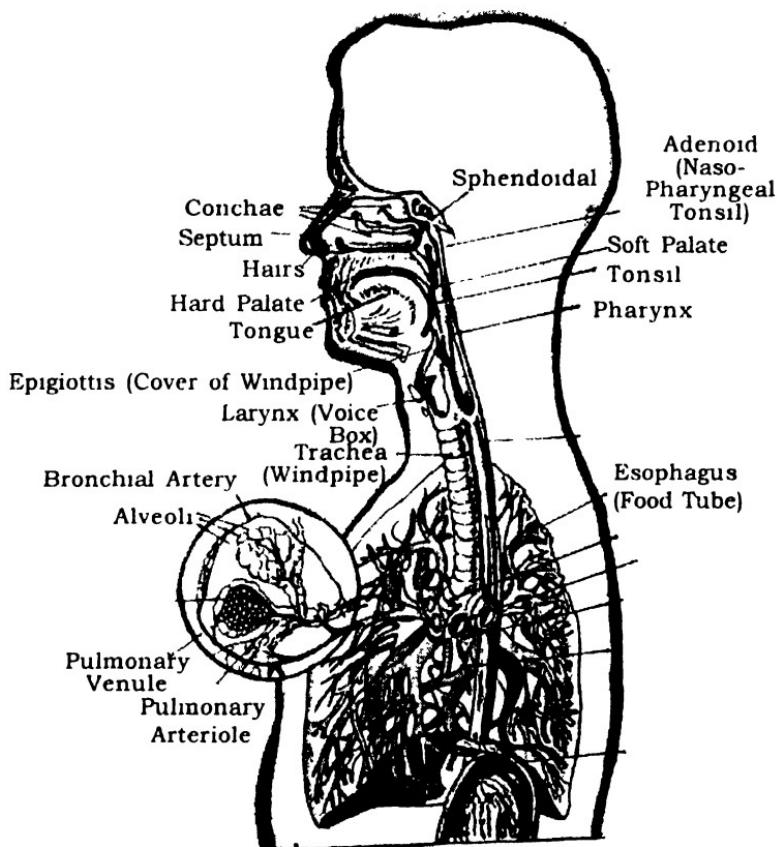


Fig. 1.1: The Respiratory System

oxygen when the blood flows through the regions where oxygen is plentiful-as in the body cells. Similarly the carbon dioxide produced when the body cell burn their fuel is attracted by the haemoglobin as if flows through the tissues where carbon dioxide is plentiful.

The act of respiration is divided into two parts. First part of the process in which the body cells trade carbon dioxide for fresh oxygen is called internal respiration. The second part involved in getting oxygen into the

blood stream in the lungs and expelling carbon dioxide is called external respiration. External respiration begins and ends with the nose. The nose performs many other duties besides detecting odours. It does the work of filtration. It filters the air entering the breathing equipment, warms it and moistens it. The nose also influences the sound of our voice. The nose has been compared to an air conditioning unit because it controls the temperature and humidity of the air entering the lungs and does the work of filtration.

The interior of the nose is divided by a wall of cartilage and bone called septum, near the middle of the nasal cavity, and on both sides of the septum, are a series of scroll-like bones called the conchae or turbinates. The function of the turbinates is to increase the amount of tissue surface within the nose so that incoming air will have a greater opportunity to be "conditioned" before it continues on its way to the lungs. The surfaces of the turbinates, like the rest of the interior walls of the nose, are covered with mucous membranes. These membranes secrete a fluid called mucus. The mucus is produced continuously and drains slowly into the throat. The mucus gives up heat and moisture to incoming air. It also helps dilute any irritating substances in the air. Moreover the membrane is coated with cilia or hair like filaments. The millions of cilia lining the nasal cavity help the mucus clean the incoming air. When we breath through the mouth, we lose the protective benefits of the cilia and mucus. A large number of large nerve filaments extending into the nasal cavity from the base of the skull are part of the special sense oxygen associated with smell.

The nasal cavity has several small openings leading into the sinuses. There are eight sinuses, four on each side, with mucous membranes that continues with the

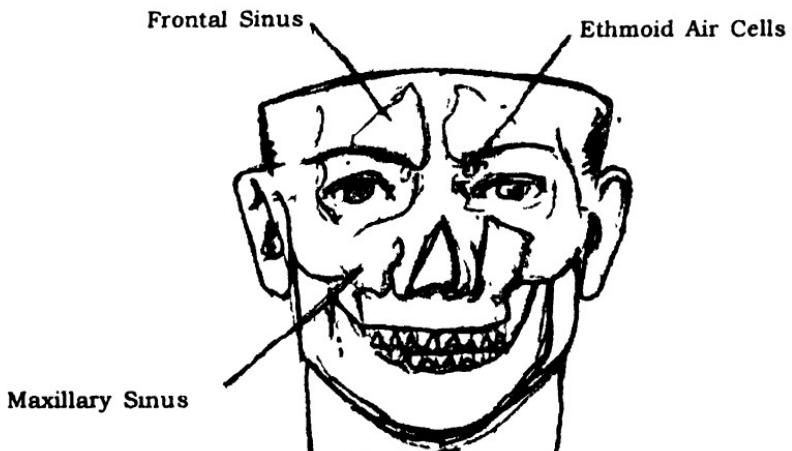
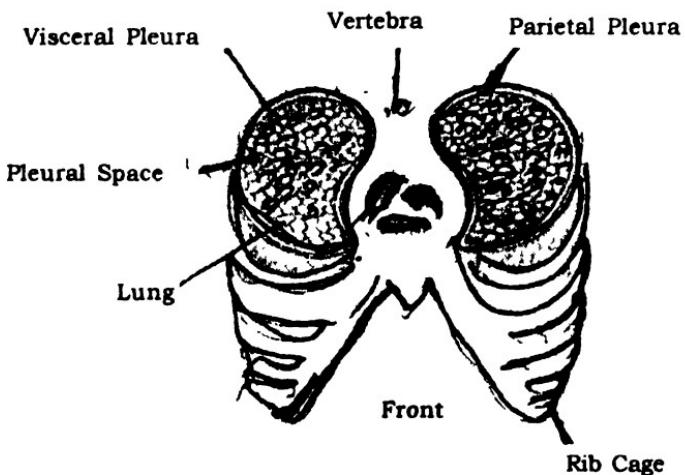
**SINUS**

Fig. 1.2: Cross Section of Lungs

lining of the nose. The sinuses help equalize the air pressure in the nasal cavity, and give resonance to the voice. Their air filled spaces reduce the weight of the skull. The sinus cavities are the frontal on each side of the forehead, the maxillary in the cheekbones on each side, ethmoidal, a honey comb of bone in the walls between the nasal cavity an the eye-sockets, and the sphenoidal behind the nasal cavity.

The incoming air that has been filtered, warmed and moistened in its trip through the nasal cavity next passes into the pharynx which is of more complicated parts of the body since it serves as a passageway for both food and air. As we know swallowing food and breathing cannot be done at the same time. If we do it we feel choking. The incoming air travels through the nasal cavity, into the pharynx and through the larynx or voice box, by crossing over the path used by food on its way to stomach. Similarly, food crosses over the route of air on its way from the nose to the larynx. But when food is swallowed, a flap of cartilage called the epiglottis folds over the opening of the larynx. The base of the tongue pushes the epiglottis as the food is moved back into the throat during the swallowing process. On each side of the pharynx, behind the mouth cavity, are tonsils. Tonsils tissue also is located at the base of the tongue and it may appear at the back and sides of the pharynx. Tonsils usually are more prominent in children and adults. Their purpose is to guard the body against infections that may enter through the mouth or nose.

The larynx also called the voice box, is at the top of the column that finally takes the air into the lungs, the trachea. However it is the air expelled from the lungs, rather than incoming air, which is used to make voice sounds. Two folds of membrane, the vocal cords, are attached to the front of the larynx wall and held by a pair of tiny cartilages. The cartilages are attached to

muscles that contract and relax to move the vocal cords towards or away from the larynx.

Below the larynx the trachea is called the wind pipe which continues down the neck and into the chest. A series of C-shaped rings of cartilage hold open the trachea. Lack of rigidity of the trachea permits us to make movements of the neck. The path of the esophagus, which carries food to the stomach runs immediately behind that of the trachea. At the point behind the middle of the breast bone where the aorta arches away from the heart, the trachea divides into two branches—the right and left bronchi.

The tiniest bronchi almost too small to be seen without a microscope have a cartilage rings in their walls. As the tubes become still smaller, they little or no cartilage but instead have muscle cells in their walls. Bronchi of this size are called bronchioles. Finally, the bronchiole ends in a tiny air sac called an alveolus. The lungs contain nearly a billion of these microscopic balloon like alveoli. The alveoli with their spaces air-filled, make the lungs appear somewhat like large sponges. The respiratory nerve centres in the brain control our "living bellows". But what moves the bellows? The primary moving force is the diaphragm, a dome-shaped sheet of muscle fibres and tendous separating the organs in the chest from the organs in the abdomen. The diaphragm is attached to the breastbone on the front, to the spinal column at the back, and to the lower ribs on the sides, when the muscle fibres of the diaphragm contract the sheet of tissue is drawn downward creating a partial vacuum in the chest cavity. This causes air to flow into the trachea, the bronchi and the alveoli. Expiration occurs when the diaphragm muscles relax, closing the "bellows" and forcing the air out again. The intercostal muscles, between the ribs, also participates in the breathing action. In forced breathing, abdominal

muscles assist in expiration by pulling upward and outward on the first rib and the breast bone. This has a chain-reaction effect on the other ribs, increasing the capacity of the chest. A man carries two quarts of oxygen in his blood, lungs and body tissues—enough to last about four minutes. Beyond that time there is damage to body tissues, beginning with the most sensitive cells in the brain.

The terms “respiration” and “breathing” are often confused and sometimes used as synonymous, but there is fundamental difference between the two. Breathing is the mechanical act of inhaling air into and exhaling it from the body. A baby starts breathing immediately after its birth, the moment placenta is cut from its body. Respiration however takes place before the birth. Respiration life and energy giving process goes on non-stop from the womb to the tomb.

2

What is Asthma?

The word asthma means panting. Asthma is a lung condition that owes its name to its predominant clinical symptom, shortness of breath. If asthma is caused by obstructed airways, it is said to be bronchial. If red blood cells fail to carry oxygen away from the lungs, it is cardiac. Asthma has a high morbidity but surprisingly low mortality, and asthmatics can lead useful lives. The long-term problem is prevention not treatment. Normally air is carried into the lungs through air ways—bronchi and as they become smaller, bronchioli—to blind terminal sacs, the alveoli. The alveolar walls consists of a thin membrane interwoven with elastic fibres. On the outer wall of each sac, red blood cells move slowly through tiny blood vessels, and as they move, exchange carbon dioxide for oxygen through the membrane. If blood stagnates, this exchange is halted and cardiac asthma results.

Bronchial asthma is caused by any obstruction of the airways that prevents oxygen from reaching the alveoli. Circular muscles control the width of the bronchi, and thus the flow of air, simultaneously, blood vessels, like radiators, adjust the temperature and mucous glands provide humidification.

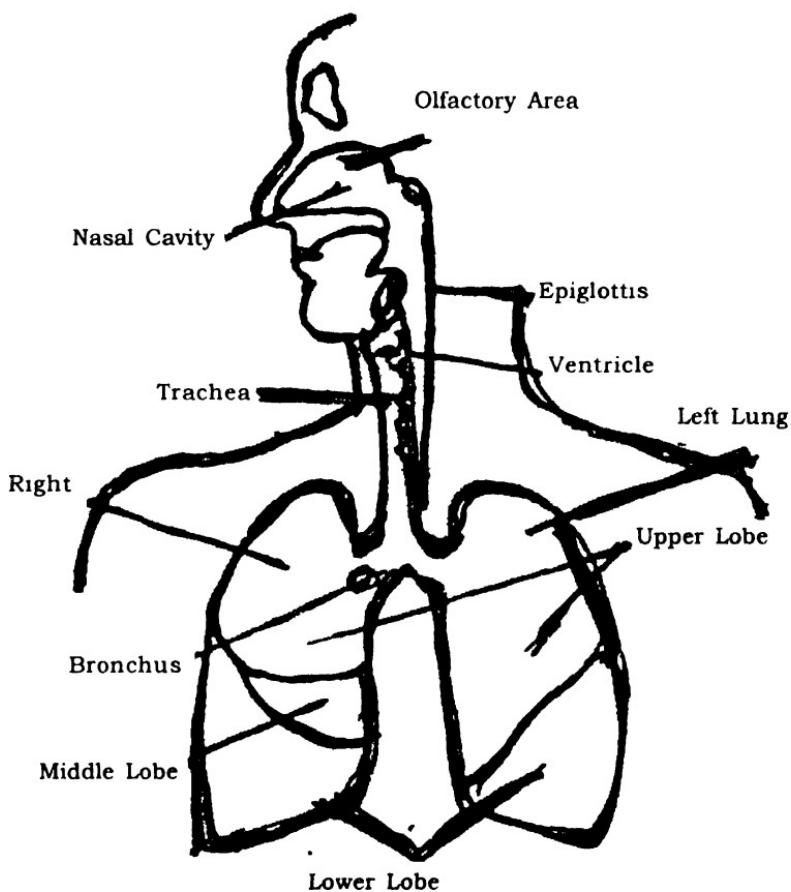


Fig. 2.1: Respiratory Tract

The proper functioning of the air-conditioning structures is maintained by automatic nerves that can when the need arises excite or inhibit them. Allergic patients during allergic episodes, produce histamine, a substance that overrules this physiological balance and incites muscles, blood vessels and mucous glands to work, regardless of need at maximal capacity. Bronchial asthma can be specified depending upon the predominant factors that cause the disease.

(a) Extrinsic Asthma

In this type of asthma the patients have an inherited liability to develop asthma when exposed to allergic agents like house dust, certain fungi, pollens, perfumes. These patients have many a time, other manifestations of allergy as well, such as recurring bouts sneezing and eczema. These patients benefit from anti-allergy treatments of different types. This type of asthma occurs in young age.

(b) Intrinsic Asthma

The patients suffering from intrinsic asthma do not seem to have an allergic background but they develop the disease because of some pre-existing disease of the lung such as past infections or existing diseases like chronic bronchitis. This type of asthma occurs in the later periods of life. Sometimes confusion arises in distinguishing asthma from chronic bronchitis and emphysema. Sometimes asthma and chronic bronchitis may co-exist in a patient. A patient may begin with asthma because of an allergy to pollens and if improperly treated, he may develop chronic bronchitis and later an emphysema as well. Sometimes a patient may develop chronic bronchitis and later on develop intrinsic asthma without any allergic background.

Another important disease which stimulates bronchial disease is cardiac asthma. Such patients experience breathlessness which may be due to heart disease. This condition also occurs in paroxysms of breathlessness, usually in sleep but sometimes due to exertion. An attack is usually accompanied by difficulty in breathing both during inspiration and expiration and by a sense of suffocation which causes the patient to stand erect and even to go in the open for air. The attacks last from few minutes to few hours. Cardiac asthma is precipitated by acute failure of the pumping action of the

left ventricle of the heart. It is a common feature with persons suffering from hypertensive heart disease.

Another type of asthma is hysterical asthma some patients particularly young girls complaint of breathlessness or asthma but actually they have sighing respiration. There is no wheeze or difficulty in either inhalation or exhalation, such cases do not pose any serious problem.

There are some diseases which at some stage may cause bronchial asthma are malignant tumours of the chest such as lymphosarcoma and hodgkins disease. Pressure of enlarged glands in lung cancer may also give rise to wheezing and breathlessness. The same thing may be experienced with the dilation and swelling of the wall of the aorta in the chest. Aorta is an important blood vessel which carries the pure blood from the heart for the rest of the body. Some of the diseases caused by inhalation of different types of dusts, vegetative and non-vegetative also can give rise to symptoms; bronchial asthma. In diagnosing this type of disease the history of the patient and his occupation cannot be ignored. Diagnosis of asthma does sometimes pose a problem in children and elderly persons. In diagnosing asthma some important factors are to be taken into account. Factors like 1. history of asthma in the family. 2. coughing and sneezing at the change of the season. 3. has the patient a running nose. 4. does the patient often catch throat infection. 5. does the patient get breathlessness after exertion or change of season. 6. does the patient have breathing problem when the wind blows. 7. does the patient live or work in a polluted environment. 8. does the patient sneeze due to perfumes or scents or fragrance of flowers.

3

Causes of Asthma

1. Allergy

Allergy is a very complicated and vast term. When a disease is not properly diagnosed it is attributed to allergy. The concept of allergy has different meaning for different people. There are innumerable things which can cause allergy, common allergy include pollens of certain trees, grasses, flowers and plants especially ragweed, spores of molds, feathers of animals, house dust, certain drugs and chemicals, components of hair dyes or insecticides, some food items, fungi, and insects.

2. Plant Pollens

Pollen grains are very small in size. Mostly they are yellow in colour. Only some of the pollens cause asthma. A plant with following characteristics :—

- a. The pollen of this plant must be carried by wind for pollination purposes.
- b. The pollen should be sufficiently light so that it is carried over long distances by the wind.
- c. The pollen must be produced in abundance.
- d. The pollen must have chemical qualities to act as an allergen.

Plants which pollinate through wind have flowers which are not so attractive and are small in size. Pollens are released from the flowers in the early morning at the time of dawn. Different asthma patients are allergic to different pollens. Pollens of some flowers such as roses, daffodils, marigold, phlox do not cause asthma.

Hypersensitivity reaction in the bronchial wall may provoke the release of narrowing agents which are called allergens. The entry of these allergens is by inhalation or occasionally by ingestion. Inhalation of allergens provokes an antigen-antibody reaction and damages the cells. As a result persons have asthma or hayfever, eczema as an allergic manifestation.

The number of pollens in the atmosphere varies from year to year depending upon some conditions such as rainfall, temperature, sunshine, wind-velocity, etc. If there is excessive rainfall before the pollination season, it stimulates rapid growth of plants. That is the reason why a patient allergic to pollens gets different symptoms from time to time, season to season.

3. Fungi

Fungi are small plants. They have no chlorophyll, hence they cannot synthesize their own food. They have a growing vegetative part, made up of long branches called mycelia. Fungi can grow best at a colder temperature like those inside a refrigerator. For rapid growth they need humidity above 70 percent. The warm and humid temperature inside rooms or storages, is good for their growth. In the house furniture dust, mattress dust can cause fungi. Home gardens breed fungal spores frequently. They grow on rotting leaves, rotten fruits, and foliage. Fungi are present in many food items. Mature cheese depends on fungi for its different taste. Yeats are used in the manufacture of the beer and wine.

Because of their light weight and small size the spores of fungi are carried in the air to distant places. All viable fungal spores in the air are not allergenic. Important allergic fungi include phoma, mucor, and candida. Asthma may begin at any age but in most cases it starts either in childhood or in middle age. Early onset asthma is slightly more common in males and late onset asthma in females. Early onset asthma occurs in atopic individuals i.e., those who readily form reaginic antibodies to commonly encountered antigens. Such individuals can be identified by skin sensitivity tests which give positive reactions with a wide range of common antigens.

Patients having following symptoms can be suspected of being allergic to fungi.

- a. Those who develop symptoms on exposure to hay, straw, compost, dead leaves while harvesting, or ploughing.
- b. Those who have perennial symptoms, which become severe in between the months of September to November and February to April.
- c. Those who are allergic to house dust and who do not respond well under specific treatment.
- d. Those who show symptoms after taking some food items and beverages.
- e. Those who show symptoms after taking some specific fruits and smelling some specific flowers.
- f. Those who live in dingy and moistured houses and stuffy rooms.

4. Unhygienic House

Some people develop allergy on some particular festival. Some people develop the symptoms during the Diwali season. It is not due to the Diwali season which

troubles them. It is customary cleaning of the house which rises to much dust that persons allergic to dust develop asthma.

5. Food Articles

Different people have allergy to different food items. Food allergy is more common in children. As the child grows older he is exposed to wider environment some food items may produce itching and swelling of the lips, sores in the mouth, vomiting and diarrhoea in the patient. The patient appears to be sensitive to certain food items. Symptoms of allergy to some food items taken may appear after a couple of hours. Some children develop milk. Some infants feel unwell when they take milk other than that of their mother. Sometimes due to milk allergy the infants health is deteriorated and when the infant is given breast feeding alone, the infants starts improving the health. Then some people get wheat allergy. This is detected when an infant is given cereal for the first time and the infant develops abdominal colic or diarrhoea. Some adults or elderly people may have asthma but when they avoid taking wheat they show some improvement. For some people egg particularly whitish part of the egg is a source of allergy. Even the smell of egg can cause allergic reactions in highly sensitive people. While others have fish allergy. Even the smell of a fish can produce urticaria in some people. Even some fruits and dry fruit items like nuts, almonds can cause allergic reaction to some people other fruits to which some people are allergic are apple, banana, cashew nuts, oranges, lemons, mushrooms, watermelon and grapes. So much so that some people are allergic to the smell of onions, garlic and mustard. Regarding food allergy it is difficult to detect the offender item. One can get clues from symptomatic therapy.

6. Insect-Biting Allergy

The insects are of two types, the singing insects and the biting insects. Insect bites normally cause pain and swelling. This is because of the venom. The degree of reaction depends upon the quantity of venom introduced. The allergic reaction to biting insects such as mosquitoes and sand fly may appear after couple of hours. But the singing insects such as bee, wasp produce immediate allergic reaction. During the monsoon season, millions of insects appear for an hour or so and then die, and their bodies, wings etc. are mixed with dust. Some people become allergic to the remnants of the insects when exposed to such a dust and they develop allergic symptoms such as asthma. Such patients develop allergic symptoms in a particular season.

7. Domestic Animals

Some people are allergic to domestic animals such as dog, horse, cow and cat. Some patients of asthma get attacks of asthma by animals. A person who is allergic to house dust may get his symptoms aggravated when the person is exposed to domestic animals namely dog, cat, horse, or cow.

8. Climate

Climatic conditions do influence asthma patients. Generally a dry climate suits better to an asthmatic than a humid one. In rainy season some asthmatics feel uneasy and uncomfortable. But patients who are allergic to pollens feel better in rainy season. Besides, some patients feel difficulty when wind starts blowing. It is probable that wind carries certain pollens which cause allergic reaction to asthmatics. Even thunderstorm, and sudden drop in barometric pressure may appear uncongenial to an asthma patient some asthmatic and

sinusitis patients are so sensitive to fall in barometric pressure that they can foretell the coming of storm on the basis of their symptoms.

9. Vocations and Air Pollution

Asthma patients feel uneasy and uncomfortable in some professions and air pollution. For example farmers, poultry men, dairy workers, industry workers and bakers are exposed to large amounts of fungus spores. Such professions can aggravate the allergy symptoms of a person suffering from asthma. Not only workers but persons living in industrial area can become victims of allergy particularly those who have a strong family history of allergy.

10. Allergic Rhinitis

This is a disorder in which there are episodes of nasal congestion, watery nasal discharge and sneezing. It may be seasonal or perennial. Allergic rhinitis is due to antigen-antibody reaction in the nasal mucosa. The antigens concerned in the seasonal form of the disorder are pollens from grass, flowers, weeds or trees. Grass pollen is responsible for hay fever. Perennial allergic rhinitis may be a specific reaction to antigens derived from house dust or animal dander and similar symptoms can be caused by physical or chemical irritants such as pungent odours, or strong perfumes, cold airy and dry atmospheres., and the smell of "Dhoop" and agarbatti. It is strange that some persons are allergic to some particular kind of fish namely Longnose butterfly fish, viper fish, sail fish, hatchet fish, glantoar fish, trigger fish, similarly some persons are allergic to some particular kind of flower namely tulip, jasmine, violet and anemone. Others are allergic to some particular kind of colours namely red, green and black., and we have observed some patients who are allergic to banana,

grapes and mango and particular kind of vegetables namely tomato, lady's finger, onion and chilli. Even some kind of tooth pastes, or insects namely spider, cockroach and mosquitoes cause allergic reaction to some asthmatic patients.

11. Laryngeal Paralysis

Paralysis is due to interference with the motor nerve supply of the larynx. It is nearly always unilateral and by reason of the intratracheal course of the left recurrent laryngeal nerve, usually left sided. One or both recurrent laryngeal nerves may be damaged at thyroidectomy or by carcinoma of the thyroid. Hoarseness or complete loss of voice (aphonia) may occur as result of hysteria.

12. Laryngeal Obstruction

The laryngeal opening (glottis) may be obstructed by
1. inflammatory or allergic oedema. 2. spasm of the laryngeal muscles. 3. inhaled foreign body. 4. inhaled vomitus in an unconscious patient. 5. tumours of the larynx. 6. bilateral vocal cord paralysis and 7. fixation of both cords in advanced rheumatoid arthritis. Laryngeal obstruction is more liable to occur in children than in adults because of the smaller size of the glottis.

13. Bronchial Obstruction

The lesions most likely to obstruct a large bronchus are : 1. tumours. 2. enlarged tracheo bronchial lymph nodes. 3. inhaled foreign bodies. 4. bronchial casts or plugs consisting of inspissated mucus or blood clot. 5. collections of mucus or mucopus retained in the bronchi as a result of ineffective expectoration.

14. Interstitial Lung Disease

This term is applied to a group of pulmonary diseases which have the following features in common :—

1. Thickening of the alveolar walls by oedema.
2. Increased with exertional dyspnoea.
3. Maldistribution of pulmonary ventilation and perfusion. Interstitial lung disease is caused by several different pathological processes but these all give rise to similar symptoms, physical signs, radiological changes and disturbances of pulmonary function. Causes of interstitial lung diseases are :—
 1. Chronic pulmonary oedema.
 2. Extrusic allergic alveolitis.
 3. Fibrosing alveolitis associated with the connective tissue disorders.
 4. Pulmonary damage following radiotherapy to the thorax.
 5. Drugs.

15. Empyema Thoracis

This is the term used to describe the presence of pus in the pleural space. The pus may be as thin as serous fluid or so thick that it is difficult to aspirate even through a wide-bore needle. Empyema is always secondary to infection in a neighbouring structure usually the lung. The principal infections liable to produce empyema are the bacterial pneumonia and tuberculosis. Other causes of empyema are infection of a haemothorax and rupture of a subphrenic abscess through the diaphragm.

4

Yoga, Meaning and Relevance

Yoga has a long history. It is an integral subjective science. Its spiritual, mental or physical import cannot be separated from each other. According to Panini, the Grammarian, the word yoga is derived from two roots, viz. Yujvir and Yuja---one referring to yoking (Yujvir Yoga), and the other referring to mental concentration (Yuj|Samadhi) and to sense control. Yoga standing for mental concentration is the theme of the entire Indian systems dealing with yoga. It also implies the control of senses. Thus the second derivation of the word yoga consists in Citta vrittinirodhah i.e., the silencing of (all) activities in the mind's substance.

Vyasa too, in his commentary on patanjali takes reintegration (Yoga) and identification ,(samadhi) as synonymous, Shri Gaddadhara, the teacher of logic (Nyaya) says: "Reintegration means identification (samadhi). It is of two kinds: conscious (samprajnata) and unconscious (asamprajnata). The union (samyoga) of some part of one's being with anything, whatever it may be of which there is a desire to know the essential nature, even though it be beyond sensory, perception its instability is called "conscious identification" (samprajnata samadhi). "Unconscious identification" (asamprijnata) is that mental union (Manah samyoga) which arises in some part of the self but, which because of the absence of inward uplift and of perfected inward contemplation remains uncoordinated.

"Conscious identification" is the state of full cognition. This means that in this state the object of contemplation is actually witnessed and the mind is fixed upon it. This is characterised by the silencing of all thought except that of the object contemplated upon. Hence, conscious identification is the silencing of mental activity. With, as its result, the witnessing of the object of contemplation. Since it is defined as state in which nothing is cognized---all notions must be abolished in unconscious identification. In this state there remains therefore nothing of the mind except the traces left by its previous activities. If this were not so, consciousness could arise again. All intuitive perceptions come within the realm of unconscious identification. According to Vedanta, yoga means supreme realization. Yoga is the reunion of the living self with the supreme self. According to the treatises on yoga, supreme realization is considered as the aim of all yogic practices. But the means of this realization as well as all intermediary stages are also taken to be included in the term yoga. The main obstacle to realization being the consistent activity of the mind, yoga is thus defined to silence the mind leaving all mental activity is yoga: "The silencing of the mental activities which leads to the complete realization of the intrinsic nature of the supreme person is called yoga".

The word yoga can also be used as an extension for knowledge, love, action etc. Since these are also means of liberation (moksha) and are thus the instruments of reintegration (Yoga). The activities of the mind are said to be five in number. These are ascertaining of facts (pramana) false knowledge (viparyaya or knowledge contrary to facts), imagination (vikalpa), sleep the experience of being unconscious and memory (smriti). The modes of ascertaining the real nature of things are direct experience. Deduction therefrom and the

traditionally transmitted revolution. The mental activity which through sensory perception leads to exact knowledge of things as they constitute the ascertaining of facts through direct evidence.

Mental activity resulting from the generalization of categories is deduction (*anumana*) mental activity contrary to facts constitutes false knowledge and is the result of a defeat (either in the perception or in the object). Memory is exclusively the activity resulting from imprints left upon the mind's substance by former experiences. The mental activity of sleep is limited to the experience of happiness during sound sleep which gives rise to such memories as "I slept pleasantly".

The Mastering of Sensory Impulses

The limits of the physical body can never be transgressed without knowledge and thoroughly mastering the sensory impulses which govern the process of living. The most vital impulses delude us the most, thus safely protecting vital functions from dangerous interferences. That is why the vital instincts and rhythms can only be acted upon and mastered through a very expert technique. It is this technique which is called *yoga*. The adept in *yoga*, the *yogi*, like the psychiatrist goes straight to the root of the most powerful instincts, those which move forcibly hold us within the domination of matter, and he is also to control his vital functions by a thorough knowledge of the particular processes and emotive regions of mind. Here the *yogi* differs from the moralist for he holds that to neglect psycho factors is remaining within their grip. The network of the instincts binds the gross to the subtle body and keeps us imprisoned. The knots of this network are strong and complex, without technique for undoing them, we can never escape from our physical envelops but are kept always on the path of the individual life is

assured. Yoga keeps aloof from emotional and sentimental impulses. Yoga is not attained by him who eats too much, nor by him who abstains from food nor by him who keeps awake. This yoga which destroys pain is achieved by him who eats and behaves as is proper, whose all actions are led by reason, whose sleep and wake are regulated.

The Methods of Yoga

Basically, all physical and mental knowledge is an experience. A conception uncorroborated by experience remains a speculation and we can never be certain of its reality. The extent of our knowledge is therefore limited by the greater or lesser extension of our perceptions. If in any way we extend the field of our perceptions, non-horizons immediately open up before our powers of knowing. In the field of sensory perceptions the microscope, the telescope the instruments sensitive to all kinds of vibrations have extended according to their power and horizons of scientific knowledge.

Indian philosophers have asserted that all knowledge is built upon experience. But they maintain that an outward perception only is not a real knowing and that the only way for us to know a thing completely outwardly and inwardly, it to identify ourselves with it, only when we are one with it, can we know it in itself and not merely as it appears to be from an external point of view. This is the intention behind yoga which refers to identification, identification with Divinity being "realisation". By its very nature sensory knowledge is limited to appearances. The ancient Indian thinkers speak of the world of appearance as the work of maya, the power of illusion, because its inner reality appears before us as if hidden by changing forms. However, deep our knowledge of a thing may be, however near we may be

to it, so long as we remain distinct from it, we cannot know it integrally.

On the eyes of a corpse an image forms like a reflection in water, but there is no faculty of consciousness to seize it, no memory to take its imprint. That which really perceives is our faculty of consciousness. It seizes upon the experience of the senses, which, were they separated from it, would be mere mirrors. The ancient Indian thought asserts that we can conceive of an Angel or subtle being, which free from a gross envelope and not bound by its limitation, can perceive all things. Might there not be likewise for our conscious some way by which it could cross the boundary of its bodily prison, all things, of which through the intermediary of the senses it can know only limited fragments. The realization of suprasensory perception is one of the stages of that particular training which the Indians call *yoga*. This training aims at the direct experience of all things through identification with them. All the Vedic scriptures are considered to have originated through this process and it is, therefore, only in *yoga* that their key is to be found. *Yoga* is the guardian of Eternal Law, *Yoga* is the guardian of knowledge without knowing the method of *yoga*, no realization is possible. However, intent on learning detached knower of the law, self restrained one may be, a God even cannot without *yoga* attain liberation. *Yoga* is thus the technique of realization. It embraces all forms of religious experience, all of which are based on *yoga*, knowingly and unknowingly. Every form of knowledge too is ultimately a form of *yoga*. *Yoga* is the means as well as the object of knowledge it is through *yoga* that *yoga* can be known through *yoga* that inclination towards *yoga* develops. He who through *yoga* becomes freed from passion delights endlessly in *yoga*.

The Yoga in Man

In recent times, Sri Aurobindo saw a new vision and possibility of advance in spiritual life. He realized that it should and could be possible for human race as such to rise to a new and higher status of living a supramental in place of the mental which it now commands, but which is subject to partiality, fragmentaries and division. A supramental status of wholeness, sure of truth is the development called for and needed in the present situation of human life. This, Aurobindo called "The integral Yoga", the yoga which should lift the integral process of growth to a new integral consciousness. In the right view, both of life and of yoga, all life is either consciously or subconsciously a yoga. For we mean by this term a methodized effort towards self-perfection by the expression of the potentialities latent in the being and a union of the human individual with the universal and transcendent existence we see partially expressed in appearances, is a vast yoga of nature attempting to realise her perfection in an ever-increasing expression of her potentialities and to unite herself with her own divine reality. In man, her thinker she for the first time upon this earth devises self-conscious means and willed arrangements of activity by which this great purpose may be more swiftly and puissantly attained. A given system of yoga, then can be no more than a selection or a compression, into narrower but more energetic forms of intensity of the general methods which are already being used loosely, largely, in a leisurely movement with a profuser apparent waste of material and energy but with a more complete combination by the Great Mother in her vast upward labour. The true and full object and utility of yoga can only be accomplished when the conscious yoga in man becomes, like the subconscious yoga in nature, outwardly coterminous with life itself we can once more, looking out both on the path and the

achievement say in a more perfect and luminous sense "All life is yoga".

Relevance of Yoga: Psychological and Physiological Context

We are living in an age of explosions, explorations and paradoxes. We have conquered the unconquerable and achieved things beyond the wildest dreams of our ancestors. Our cosmonauts have eclipsed icarus and our scientists have penetrated to the heart of the atom. Inventions have altered the very condition of life. Science has changed the world into a place of abundance and plenty. But on the one hand the unprecedented growth of the knowledge and privileges of man have taken place, on the other, due to ever-increasing ambitions, desires and competitions, restiveness and maddening tensions have also increased by leaps and bounds. Materialism could not fill the chasm of spiritual and social dissatisfaction. Even today, the human being is as much destitute, suspicious, aggressive and restless as he was perhaps not in the primitive age. Ever-increasing disease of insomnia, mental deformity impulses opposing ethical values and destructive instincts are some of the common physiological and psychological problems facing man.

An important reason for this growing afflictions is that the present day man, due to complexity of existing culture, can neither express nor fulfil his desire in a natural way, nor can he get rid of his ever increasing ambitions. In the inner self a storm of passions and outwardly a covering of civility are such two levels which are breaking the man of his own. The simple and natural life which has been lost by the human society could not be substituted by the cultural sublimation and eradication of fundamental instincts and passions. A

deep void and perplexity full of struggle is the tragic tale of modern man. He is passing through various internal and external stresses due to which his mind is afflicted and full of anguish. The practical acquisition of yoga is the attainment of tension free citta. Yoga technique being based on wisdom oriented restraint and contentment uproots the desires and produces calmness in the mind.

According to Freud libido is the main force at the root of impulses, passions and their consequences which in a way is a desire for a spouse and its common form is a will to possess. Fatherly or motherly love, devotion for Lord, materialistic fascination, anger, envy, emulation, repulsion etc., all the feelings and impulses are expressions of this power. Hunger thirst lust etc. the fundamental instincts when growing in the form of desires gradually become hard knots and are called passions. These passions expect their own fulfillment and in this effort and their expression, but due to contrary external positions and nonacceptance by ethical ego, which does not recognize them, does not allow them to be fully expressed. Thus the struggle of these two elements generates tension. These passions and emotional currents. In want of their fulfillments and expression due to obstructions become part of the subconscious mind. There these suppressed passions do not get extinct and wait in disguise for their expressions. They express in the form of "Undesired trepidation" anxiety, daydreaming, mistakes in common behaviours and forgetfulness etc. and breed many physical ailments and mental deformities to create a further long chaotic tradition.

Yoga having analysed the human behaviours searches out this inherent catalytic element i.e., kama element in it, to which it calls attachment. The research of yoga transcends the research of psychology when the former

accepts avidya as a more subtle element, the root instigator of behaviour. This avidya is the inclination of mind to search for the self in the objects other than the self. It is that false vision which according to Patanjali and Jaina yoga is negation of the realization of the self which is eternal and free. According to Buddha yoga, this avidya insists to accept its own existence. Yoga considers this prejudice as the originator of kama or attachment which usurps other's material. Thus yoga to some extent gives concurrence to Freud and to some extent it is in disagreement with him. Yoga also searches the opposite element of avidya, i.e., viveka khyati or in other words the power of the self which is the seer. It is considered the power of atman in jaina yoga, of Purusha in patanjali yoga and of citta in Buddha yoga, thus all these accept this power in one voice. This very power differentiates restraint from mortification.

In psychology mind analysis is that catharsis process which while bringing the unconscious knot, emotions and feelings of the mind to the conscious land, eliminates the tensions created there of previously after hypnotising the patient through instructions his suppressed unknown emotions were known but Freud invented which the patient, after having laid in the free posture sukhasana, is allowed to speak whatever comes in his mind. He is inspired to expose not only his story but also all the images and memories occurring in his mind. In this way, the suppressed desires erupt and feelings are catherised.

According to yoga system also this process of catharsis can be implemented in two ways. So long as the suppressed passions are concerned, through Savasana the unconscious samaskaras are allowed to protrude fully. Then they are made known through the powers of the mind which could further be catherised. The subtle seeds of this process of catharsis are found

in the pratyahara of Patanjali yoga, kayanupasyana and cittaupasayana practises of Bhuddistic yoga, and udirama process done through tapas and meditation in Jaina yoga.

In yoga, the purgation protruding emotions can be catherised without suppression. In the moments of their protrusion without resisting their emergence on the mental level in the light of the unprejudiced power of the seer or by enlightening through the discriminatory wisdom, they can be purgated. In this process, the cittasakti which by becoming ideational through the emotions could flow outwardly is made internal oriented. In psychology when protruding emotions are controlled or obstructed by self-imposed ethical powers are controlled or obstructed by self wisdom which transcends even ethical ego procreates restraint and thus the emotions are purgated.

In this purgatory process, other parts of yoga may also prove to be important. Since the emotions have both the physical as well as mental dimensions, the Pranayama and Asana may be helpful their catharses to some extent. The balanced body and tranquilled respiration attained through Asana and Pranayama can help cleansing the material aspect. The yoga might agree with this principle of James Lang that "the knowledge of a stimulus creates a few changes in the body and the feeling of those changes in emotion". Ordinarily we say that we have lost our wealth and we weep. We meet a bear, we are panicky and take to heals. A rival insults us, we are angry and we beat him. But according to this theory this sequence is faulty because more intellectual statement would be that because we weep we undergo anguish. We beat hence we become angry. We tremble and become afraid of. But yoga contrary to the above alluded principle of James Lang does not explain the emotions as merely

physical changes because in its (Yogic) view, the complete catharsis of emotions requires development and consciousness of cittasakti which in its supreme nature is free from attachments and detachment. The viveka khyati of patanjali yoga, vipasyana and alertness (sajagata) of Buddhist yoga and janai practices of jaina yoga, throw ample light on this fact alluded to above. It does not mean that yoga excludes the fulfillment of genuine passions because yoga accepts the fulfillment of biological needs and this fact is delineated in patanjali yoga by distinguishing between yama and mahavrata and by accepting them as the constituents of yoga. Likewise this fact is further cleared by the anuvarats spiritual repudiation of biological values but it is the establishment of spiritual values above biological values as is clear from the word adhyatma (adi + atman) itself. The practice of yoga is not based on suppression, it is that practice of attachment based on wisdom which further educates and purifies the internal dimension of human personality.

Body Context

Yoga does not educate only inner aspect of personality but it undertakes the education of outer dimensions also. Not only asans but pranayama, prayahara and dhyarna play an important role in maintaining the physical health. Through asanas, the fat body becomes flexible internal organs are massaged, blood circulation is regulated and the nerves are balanced. Through regular practice of asans the secretion of thyroid, parathyroid and indoenine diseases like asthma, diabetes, high blood pressure, mental ailments, heart ailments and abdominal disorders can be used.

Pranayama and Health

Every part of the body is regulated by the energy supplied by mind and the arterie emerging from spinal cord. The power of the desired flow of this energy depends upon the secretion of indoarine glands and this energy is cultivated through blood made available to the glands by the nervous system. The best blood is produced by the life promoting oxygen and nutrition elements which cherish and nourish the body parts. Oxygen through inhalation and nutritional elements are received from the blood but for this all respiratory organs, digestive system and circulatory system are required to be efficient so that continuously produced carbondioxide may be purified and pure blood may remain unaffected from the poisonous gases produced by the undigested food. In pranayama through purka racaka etc. the exercise of stomach and its muscles, liver, intestines and lungs is undertaken so that they all may become stronger. Through pranayama the organs get attuned in such a way that a human being digests a lot more oxygen than his ordinary capacity in a day. Pranayama makes circulatory system regular and thus with the help of a pure blood circulation even the unconscious part of the mind also becomes active.

Meditation and Health

The meditation influences the thyroid gland, it normalises the oxidising power of body and helps balancing the excessive stimulation produced by the secretion of thyroid hormones. Likewise lethargy, mental inertia, produced by the clauminated. Secretion of thyroid hormones, are eliminated. As made known by "Electron safelogram" experiments, the meditation dispels away the tensions. During the process of Dhyana, the activity of the alpha waves is enhanced and a deep rest is attained. Hence one can save one self from the

badly effected respiration due to mental tension. Similarly, the energy likely to be wasted in anxiety and thinking process may be saved.

Yoga in Social Context

So long the practical system put forth by yoga is concerned, it impresses upon discarding violence and corruption which are the polluters of social life. Five vratas of Jaina yoga and Patanjali yoga, comprising ahimsa, satyam asteya, brahmacharya and aprigraha and panchasila of Buddhist yoga in which besides first four vratas, abstinence is also included, can be fully vindicated in the social context only. Violence is intentional persecution whereas ahimsa is its avoidance. Ahimsa is not the repudiation of "Otherness" but it is the sacrifice of that persecution which can be held valid in the presence of the other. Likewise truth being avoidance of deceit through gullible woods is execution of altruism through valid and secret woods. It also cannot vindicate itself without social context. Asetya in the form of avoidance if it gears oisssessuin and aprigraha in the form of avoidance of others possession and aprigraha in the form of non-amassing of the riches creates a social balance from economic point of view. Out of these, the former indicates about the wrongs of consumption without producing anything and the latter declares the hoarding, exploitation and artificially created scarcity to create imbalance in the social life is improper. Thus, these principles educate us to "Produce more and accumulate less" or "Maximum production and minimum profit". This theory of yoga rectifies the shortcoming of the modern and most dominating theories of capitalism and socialism.

Maitri, Karuna, Mrduta and Upeksha which have been accepted with one voice by Jaina, Buddha and Patanjali yoga can be implemented only in the social context and

these feelings gradually soften the behaviour towards commonly hard-bit people, progressive individuals and the enemies.

Since all the three yoga traditions stress upon the elimination of attachment and desires, one question in this context may arise whether attachment is connected with social relations. Indeed neither by breaking the relations attachment is finished, nor by being attached, the relations are severed, social relations based on attachment cannot escape struggle and envy, rather they without these cannot stand of their aim because attachment circumambulating and individual religion, community or nation, invariably gives birth to the concept of other religion, other community and other nation. This concept again in their own contexts creates schism in the name of nepotism, casteism and narrow nationalism. Though it is difficult to a certain limit, the desired social life is not possible. The detached attitude alone can produce harmonious temperament which can make social anomalies not-existent and through which sociability can spontaneously flower.

Philosophical and Metaphysical Context

Science is a study based on inspection and tests of various limited aspects of reality and philosophy is intellectual study rooted on the conceptual analysis of the reality and the truth. Dharma and its specific practical aspect yoga is an effort for spiritual relationship or visualization of that truth which is in the form of highest value or ideal. This effort is comprised of that specific realization and behaviours in which not only cognitive aspects of personality but the effective aspects are also suitably educated and through total purification of personality, the spiritual value and ideals are attained.

Yoga is not magic or fear of any kind, physical or mental. Yoga is a way of life. A mode of thinking based on sound philosophy and deep psychology. It is an educational process by which the human mind is trained to become more and more natural and wakened from the unnatural conditions of life. It is a subjective science and art. It transcends both general and abnormal psychology and helps harmonious development of mind and body. From time Immemorial, man has devised ways and means for attaining peace for nonmedical measures to have control over common diseases like hypertension. Heart ailments, diabetes and personality disorders. Man would like to mould his psychosomatic apparatus in such a way that he can face the stress and strain of modern life. Yoga is the earliest and the most effective method of providing peace and tranquility of mind. The meditation of Japan and China practised in Buddhist temples is the same as Dharna in yogic meditation. Though over all aim of yoga remains the same namely the attainment of physical, mental and spiritual health. But it is yoga in totality Yama, Niyama, Asans, Pranayama, Pratihara, Dharna, Dhyana and Samadhi (Eight limbs of yoga) which can give harmonious physical, mental and spiritual health to modern man. When one practices yogic methods one's capacity is enhanced to do more creative work. Which benefits him and society. Too much of stress and strain can cause many diseases. The number of these diseases are Increasing rapidly. There is an urgent need for taking proper measure to prevent the development of such diseases yogic practices not only help in reversing the progress of such diseases but also improve the resistance of the body at the psycho-physiological level.

5

Allergic Diseases

The allergic diseases pose a riddle. The causes of many allergic diseases are not known. However, some specific causes are attributed to some allergic diseases. Many types of particles and dust particles suspended in the atmosphere contain antigenic properties and are capable of stimulating the production of specific antibody when inhaled. Further exposure to antigen of an individual "sensitised". In this way may provoke an allergic reaction which causes pathological changes and disturbances of function in the tissues where the reaction occurs. Three types of allergic responses are concerned in the respiratory diseases. Type 1 Anaphylactic response mediated by reaginic antibody, associated with an immediate hypersensitivity reaction. Type 2 or Arthus-type response, mediated by precipitating antibody associated with a late hypersensitivity reaction which may contribute to the production of allergic alveolitis. Type 3 or Tuber culin-type allergic responses which are cell mediated and do not involve circulating antibody are usually associated with delayed hypersensitivity reactions in conditions such as allergic bronchopulmonary aspergillosis. Ingested antigens or drugs acting as haptens such as aspirin, penicillin occasionally produce allergic respiratory disorders such as bronchial asthma and pulmonary eosinophilia.

1. Allergic Rhinitis

This is a respiratory disturbance in which there are episodes of nasal congestion, watery nasal discharge and sneezing. It can be seasonal or perennial. Allergic rhinitis is due to antigen-antibody reaction in the nasal mucosa. The antigen concerned in the seasonal form of the disorder are pollens from grasses, flowers, weeds, and trees. Grass pollen is responsible for hay fever. Perennial allergic rhinitis may be a specific reaction to antigens derived from house dust, fungal spores, or animal dander., but similar symptoms can be caused by physical or chemical irritants such as pungent odours or fumes including strong perfumes, cold air and dry atmosphere.

2. Bronchial Asthma

Bronchial asthma is characterised by paroxysms of dyspnoea accompanied by wheezing resulting from temporary narrowing of the bronchi by muscle spasm mucosal swelling or viscid secretion. The bronchial narrowing interferes with pulmonary ventilation and increases the work for breathing by raising the resistance to air flow within the bronchi. Being more marked during expiration it also causes air to be "trapped" in the lungs. The narrowed bronchi can no longer be effectively cleared of mucus by coughing, and the obstruction of many of the smaller bronchi by inspissated and often very tenacious secretion adds to the respiratory disturbance. Asthma may develop at any age but in most cases it starts either in childhood or in middle age. Early asthma is slightly more common in males and late asthma in females. Early asthma occurs in atopic individuals. The antigens responsible for asthma in atopic individuals generally enter the bronchi with the inhalation of air and are derived from organic

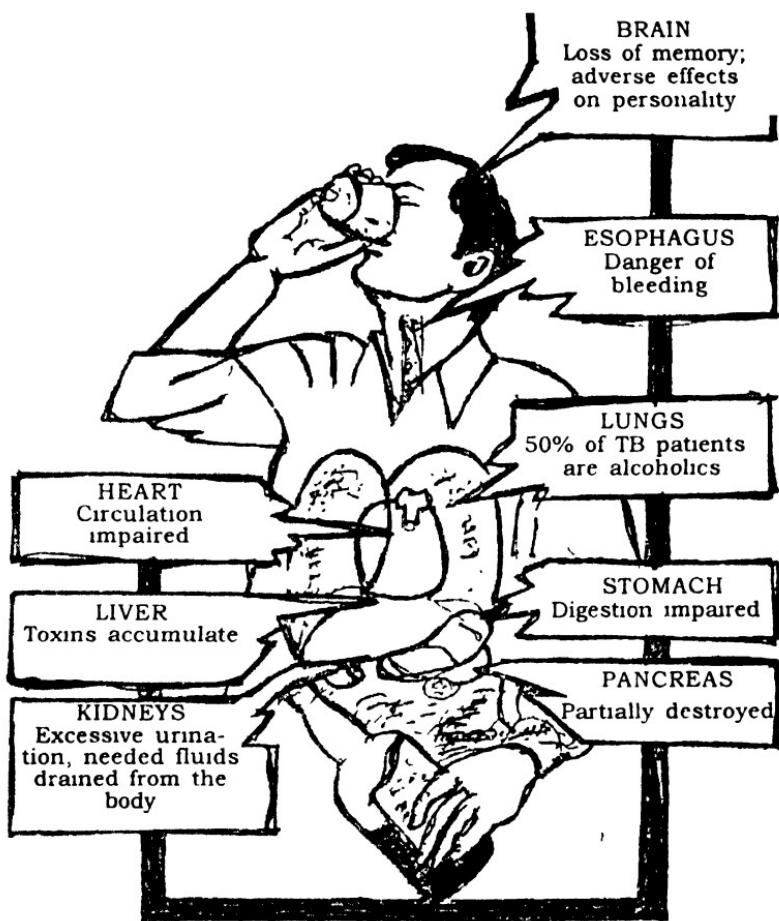


Fig. 4.1: Effects of Alcohol

material, such as pollen, mite-containing house dust, feathers, animals dander and fungal pores. Much less frequently similar effects may be produced by ingested antigens, derived from certain foods such as fish, eggs, milk yeast and wheat which reach the bronchi via the blood stream. Irrespective of the fact whether asthma occurs in atopic or non-atopic individuals, the symptoms

are often aggravated by non-specific factors, such as bronchial irritation caused by tobacco smoke, dust, acrid fumes, and emotional stress. Strenuous exertion can also provoke an asthmatic attack in predisposed individuals, either by reflex stimulation of the vagus nerve or by the contracting muscles of circulating metabolites. Bronchial asthma may be episodic or chronic and although there is a good deal of overlap between these two syndromes, the distinction is useful particularly in terms of prognosis and management. Generally atopic individuals develop tend to develop episodic asthma and non-atopic individuals chronic asthma. In typical cases of episodic asthma the paroxysms, which may occur any time during day or night, are of sudden onset, but may be preceded by a feeling of tightness in the chest. Expiration becomes an exhausting effort in contrast to inspiration which is short and gasping. The patient adopts an upright position, fixing the shoulder girdle to assist the accessory muscles of expiration. Wheezing mainly expiration is heard and there may appear cough which aggravates the dyspnoea. In severe attacks the pulse is rapid. The attack may end abruptly within an hour or so. The term "status asthmaticus" describes a state of intense asthma which continues for many hours or days. In chronic asthma the paroxysmal character of the symptoms is usually less conspicuous.

3. Pulmonary Eosinophilia

This term is applied to a rather heterogeneous group of conditions which have two features in common—an increase in the number of circulating eosinophil leucocytes and transients radiographic opacities in the lungs. These conditions can be classified as :—

1. Simple
2. Tropical

3. Asthmatic
4. Polyarteritis nodosa.

Regarding simple type this is probably immune reaction in the lung to various foreign proteins and to certain drugs acting as haptens. In tropical countries the antigen is usually derived from helminth larvae as they migrate through the lungs, but in temperate regions the antigenic agent is usually a drug.

4. Allergic Alveolitis

In this disease, the inhalation of certain types of organic dust produces a diffuse allergic reaction in the walls of the alveoli. There is a cellular exudate consisting of polymorphs, lymphocytes and plasma cells, these changes cause decreased pulmonary compliance and ventilation inequalities. Some of the agents which cause allergic alveolitis are mouldy hay, mouldy sugar, cane fibre, malting barley, bark of maple trees, pigeon loft or bird cage, air-borne dust in factory making biological washing powder. Allergic alveolitis is suspected when a person regularly exposed to a heavy concentration of organic dust complaints, a few hours after re-exposure to the same dust of general malaise, dry cough and dyspnoea without wheeze.

5. Larynx

Acute catarrhal laryngitis usually occurs either as a complication of coryza or as a manifestation of one of the infectious fevers e.g., measles. It may also be caused by the inhalation of irritant gases. In this condition the laryngeal mucous membrane is swollen, congested and coated with mucus. It is infiltrated with inflammatory cells. The patient's throat is dry and sore. The voice is at first hoarse and then reduced to a whisper. Speaking may be painful. There is an irritating non-productive

cough but the general upset is usually mild. Other common disorders of the larynx include chronic laryngitis, laryngial tuberculosis. The characteristic lesion of tuberculosis is the tubercle. This consists of a microscopic nodular collection of epithelioid cells surrounded by zones of lymphocytes and fibroblasts. There may be giant cells and a few bacilli in the centre. The initial primary tuberculosis infection usually occurs in the lung but occasionally in the tonsil or in the alimentary tract. Progressive pulmonary tuberculosis may develop directly from a primary lesion or it may occur later or it may be the result of reinfection. Chronic laryngitis occurs as a result of repeated attacks of acute laryngitis., excessive use of the voice especially in dusty atmosphere, heavy tobacco smoking, mouth breathing from nasal obstruction and chronic nasal and oral sepsis. In this condition the vocal cords of the patient are thickened and opaque. The chief symptom is hoarseness and sometimes voice may be lost. There is also irritation of the throat and spasmudic cough with a little mucoid sputum. As chronic and progressive hoarseness may also be caused by tuberculosis and tumours of the larynx and by laryngeal paralysis.

6. Laryngeal Paralysis

Laryngeal paralysis may be organic or functional. Organic paralysis is due to interference with the motor nerve supply of the larynx and may be caused by the lesions of the brain stem., toxic and infective lesions of the vagus nerve and by the interruption of the recurrent laryngeal nerve or by tumour. This is the most common way in which laryngeal paralysis is caused. Functional paralysis of the larynx of hysteria. Hoarseness always accompanies laryngeal paralysis, paralysis of organic origin is seldom reversible but when only one vocal cord is affected the hoarseness may improve or even

disappear. "Bovine" cough which is a marked feature of organic laryngeal paralysis results from the loss of the explosive phase of normal coughing. Bovine cough does not occur with hysterical paralysis.

7. Laryngeal Obstruction

The laryngeal opening (glottis) may be obstructed by
a. inflammatory or allergic oedema or exudate. b. spasm of the laryngeal muscle. c. inhaled foreign body. d. inhaled vomitus in an unconscious patient. e. tumours of the larynx. f. bilateral vocal cord paralysis.

Sudden complete laryngeal obstruction by a foreign body produces the clinical picture of acute asphyxia violent but infective inspiration efforts with indrawing of intercostal spaces and the unsupported lower ribs, accompanied by deep cyanosis. If unrelieved, the condition deteriorates rapidly and death ensues within a couple of minutes. The great danger in these cases is that the obstruction may at any time become complete and cause sudden death.

8. Trachea

Acute tracheitis is a common complication of viral and bacterial infection of the upper respiration tract, and is usually associated with acute bronchitis. This condition is an acute inflammation of the trachea caused by pyogenic organisms such as strept, pneumoniae, influenza. Infection by these organisms is common sequel to coryza influenza measles and whooping cough. Other factors predisposing to the development of infection include cold, damp foggy and dusty atmosphere, smoking and chronic mouth breathing which allows infiltrated air to enter the bronchi. When a large bronchus is completely obstructed, the air in the lung lobe or segment it supplies

is absorbed, the alveolar spaces close and the affected portion of lung tissue contracts and becomes solid. The percussion note over the collapsed lung or lobe is dull, the breath sounds are diminished and there is displacement of trachea. If a large bronchus is partially obstructed, a situation arises in which there is less resistance to air flow through the narrowed bronchus during inspiration than during expiration. When ever a bronchus is narrowed bacterial infection of the lung tissue it supplies is virtually in evitable, and this may occur when the degree of obstruction is insufficient to cause pulmonary collapse.

9. Bronchial Adenoma

This is an uncommon tumour occurring in a younger age group and affecting females as often as males. Although it is classified as a benign tumour it possesses some of the properties of malignant growth. A bronchial adenoma of the "carcinoid" type may secrete hydroxytryptamine and give rise to the carcinoid syndrome. The usual pathological lesion is a small, vascular tumour within the bronchial lumen with a large encapsulated extension. Blood-borne metastatic deposits in the lung may be derived from malignant disease anywhere in the body. The secondary deposits are usually multiple and bilateral. Extensive infiltration of the pulmonary lymphatics by tumour may develop in patient with carcinoma of breast, stomach, pancreas or broncus. There are two types of tumours., Benign tumours and malignant tumours. In Benign tumours, the condition include neural tumours, teratoma, developmental cysts and goitre. All of them are rare. The effects produced by a benign tumour are related to its size, and symptoms are present only when it compresses vital structures. Malignant tumours are mediastinal lymph node metastases reticulosisis, leukaemia, malignant thymic tumours. The important feature of this

group of tumours is their power to invade as well as to compress mediastinal structures, bronchi and lungs.

10. Bronchiectasis

This disease implies abnormal dilatation of the bronchi. It is produced in three different ways :—

1. When pulmonary collapse follows obstruction of groups of small bronchi by secretion, the shrinkage of the affected portion of lung exerts outward traction on the walls of the medium-sized bronchi which becomes dilated. When the bronchial obstruction is itself the result of severe bronchopulmonary infection bronchiectasis is liable to become permanent.
2. It may be due to bronchial distension resulting from the formation of pus beyond a lesion obstructing a major bronchus, such as a bronchial carcinoma.
3. Seldom it may be the result of congenital maldevelopment of the bronchi.

Bronchial dilatation by itself does not necessarily cause symptoms, which are usually due to infection in the dilated bronchi and in the lung tissue. Because of the many different causes of bronchiectasis no precise age and sex incidence can be stated. This disease usually starts in childhood but may not produce marked symptoms until some years later.

11. Chronic Bronchitis

Chronic bronchitis implies clinical syndrome which many individuals develop in response to the long-continued action of various type of irritant on the bronchial, of these is tobacco smoke but they also include dust and fumes, occupational hazards, atmosphere pollution in industrial cities and towns. Infection is

sometimes a precipitating factor in chronic bronchitis. Exposure to dampness, to sudden changes in temperature and to fog can be aggravating factors. The disorder occurs most commonly in middle and late adult life. More males are affected than females. It is more common in smokers than non-smokers and in urban than in rural people.

12. Dry Pleurisy

This term is used to describe cases of pleurisy at the stage of fibrinous exudation when there is no significant degree of effusion. It is usually secondary to bacterial infection in the underlying lung but may also occur in association with a viral infection which primarily involves the intercostal muscles and is known as "bornholm disease". Dry pleurisy is a common feature of pulmonary infarction and may be an early manifestation of pleural invasion by a pulmonary tumour or of pulmonary tuberculosis. The characteristic symptom of dry pleurisy is pleural pain. In this disease rib movement is restricted and the breath sounds are diminished on the affected side. A pleural rub is heard in high proportion of cases. This may take the form of a creaking sound audible only towards the end of inspiration but unaltered by coughing.

13. Empyems Thoracis

This term is used to describe the presence of pus in the pleural space. The pus may be as thin as serous fluid or so thick that it is difficult to aspirate through even a wide-bore needle. The causative organism may or may not be isolated from the pus. Empyema is always secondary to infection in a neighbouring structure, usually the lung. The principal pulmonary infections

liable to produce empyema are the specific prenia and tuberculosis. Empyema has become a rare disease because pulmonary infection can now be readily controlled.

6

Pranayama

Pranayama means the rhythmical breathing exercise by which lung motions, nerves-currents and mind functions are regulated. The pranashakti works from muldhara chakra. In order to know the functions of prana, one has to purify one's mind. In order to stop leakage or wastage of prana-shakti one has to exercise control over speech, thoughts, and desires and emotional feelings. The technique of pranayama is only an attempt to stop all the activities of nerve-currents and their leakage. Pranayama is of two types i.e., lower and higher. The lower pranayama is meant for physical and mental health, and the higher pranayama for high spiritual attainments. In high breathing, the upper part of the chest, the lungs and the lower part of the lungs are moved. In this kind of breathing, the minimum amount of air enters the lungs with the maximum of effort. The middle way breathing is better than high breathing normally people in normal health breath in this way. Low breathing is the best and most-efficacious way. In this kind of breathing, the movements of the diaphragm play a very important part and air rushes into fill the lower and middle parts of lungs. But during the practice of pranayama all the three kinds of breathing are involved. Prana is force, magnetism and electricity. It is due to prana that digestion, excretion and secretion

take place. The prana in the air performs a number of functions in the human body. Each of these has a specific name and aim :

1. Prana: It circulates in the area around the heart and controls breathing.
2. Apana: It circulates in the lower regions of the abdomen and controls the excretory functions.
3. Udana: It remains in the thraetic cage and controls the absorption of air and food.
4. Vyana: It spreads throughout the body and distributes the energy from food and breath.
5. Naga: It relieves abdominal pressure by provoking excretion.
6. Kurma: It controls the eye lids to prevent foreign bodies from entering and dazzling light.
7. Krkara: It prevents certain substances from rising into the nasal cavities or descending into the throat causing sneezing and coughing.
8. Devdutta: It ensures the absorption of extra oxygen into the tired body and yawning.
9. Dhananjaya: It remains in the body even after death and sometimes causes the corpse to swell.

Persons suffering from asthma and allergies are required to do the following exercises regularly and seriously :

1. Sit on the folded blanket in sukhasana or sidasana. The body should be kept perfectly steady with head, neck and back in a straight line. Close the right nostril with the right thumb and slowly inhale through the left nostril. Then exhale through the same nostril. Do this at least ten times.

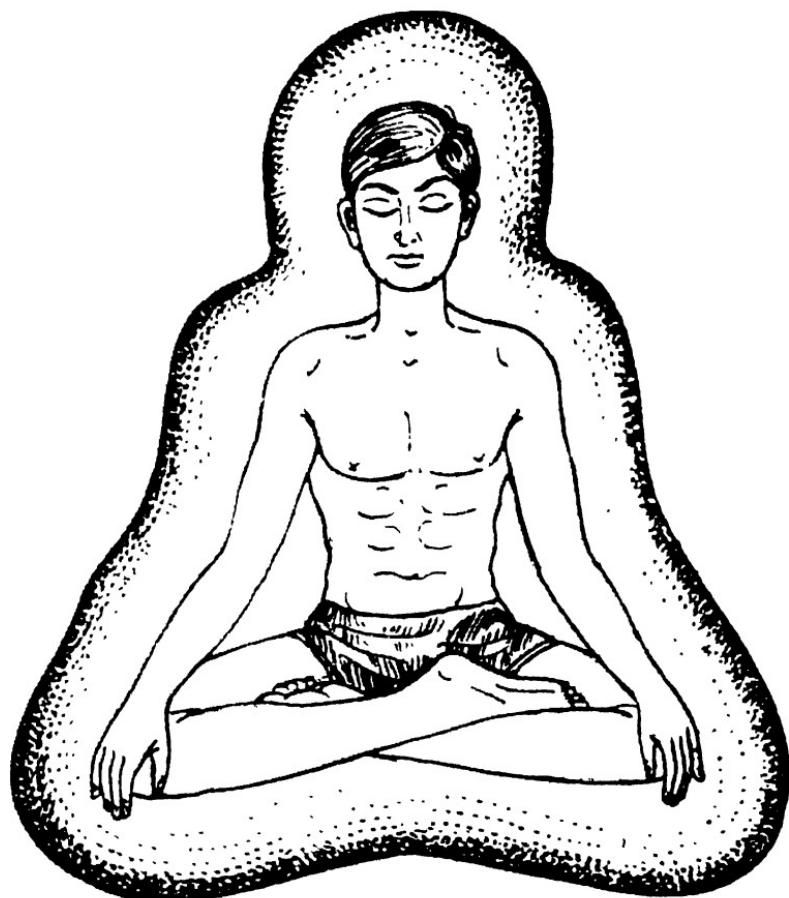


Fig. 5.1: Prāṇamaya Kośa

Inhale through the right nostril by closing the left nostril. Then exhale through the same nostril. Do this at least ten times.

2. In the same sitting posture, draw the air in through both the nostrils. Retain breath as long as you can with ease and comfort, then exhale slowly. This process may be repeated twelve times.

3. In the same sitting posture close the right nostril with the right thumb and inhale through the left nostril. Retain breath as long as you can with ease and comfort and exhale through the right nostril by removing the thumb. Repeat this exercise at least ten times. Likewise close the left nostril with the left thumb inhale through the right nostril. Retain breath as long as you can with ease and comfort. Repeat it ten times.
4. Sit on a folded blanket in sukasana or sidhasana. Keep your body, head and neck straight. Close your eyes and mouth. Inhale and exhale quickly 7 to 12 times while practising this pranayama a hissing sound becomes audible. After doing this exercise ten times retain breath as long as you can comfortably., and exhale slowly. While retaining the breath, glottis should be closed completely. The nostrils should also be blocked with your thumb. This constitutes one round. Repeat it ten times and relax. This exercise removes the phlegm and cleanse the nerve channels. It purifies the blood stream, regenerates the liver, spleen and pancreas, warms the body and tones up the entire nervous system.
5. Sit on a folded blanket in sukasana or sidhasana with eyes and mouth closed. Inhale breath with both the nostrils and retain breath as long as you can with ease and comfort. While retaining breath your glottis should remain half closed. This partial closure of glottis produces a soft and audible sound while breathing. Then exhale breath slowly and rhythmically. This exercise removes phlegm from the throat. It cures pulmonary and dropsical diseases. It also purifies the blood stream and prolongs life. This exercise is also very beneficial for persons suffering from asthma.

6. While sitting in the same posture with eyes closed, fold your tongue in such a manner that the tip of the tongue touches the upper palate, and draw the air through the mouth. Retain breath as long as you can with ease and comfort. Then exhale with both the nostrils. In this pranayama exercise air is inhaled through the mouth with a hissing sound. This pranayama exercise is equally beneficial for persons suffering from asthma and allergies. It increases the vigour, vitality and purifies the blood stream and prevents disease.
7. Sitting in the same posture, contract your lips and protrude your tongue beyond the lips. Fold your tongue like a tube and breathe in, making a hissing sound. The lungs and stomach are filled slowly with the air drawn in. Retain breath as long as you can without any suffocation. Then exhale air through both the nostrils. Repeat it 12 times. This pranayama exercise gives great tenacity of life to the practitioner. It banishes all type of fevers, splenitis and several other organic diseases. It also removes poisonous impurities and purifies the blood.

The great sage patanjali has said, "Just as lions, elephants and tigers are controlled by slow degrees. When the exercises of pranayama are performed properly, they eradicate all diseases".

Observance of Rules

Before practising pranayama strict adherence to the following rules must be shown :—

1. Place: The place selected for doing pranayama should be neither high nor low, and it should be lonely, neat and clean, free from dust, smoke insects and other disturbing factors. If the place of

practise is a room, it should be airy and well ventilated. During the hours of pranayama no incense should burn. To be beneficial pranayama must be practised with due care and attention.

2. Food: Persons suffering from asthma should avoid fried, roasted, unbalanced and improperly cooked food. The place of cooking should be neat and clean, free from flies, dust and mosquitoes. Cold food should be avoided. One should take food that is simple nutritious easily obtained and easily digested. In selecting food one must know its suitability according to one's physical build up and the climate in which one lives. A kind of food however simple and nutritious may not suit all people living in different climates. Too much of sour, pungent or sweet things should be avoided. In no case should chillies and pickles be used.
3. Sexual life: Married people must lead a well regulated sexual life. In taking up pranayama exercises well-regulated sexual life is essential. Sexual energy is the greatest power of the body and mind. This is the supreme strength in human body. Instead of wasting this power, it should be controlled and converted into great mental energy called "Ojas shakti". Many maladies, diseases are due to reckless sexual enjoyment. Married people who desire health, peace and longevity of life should therefore lead a well-regulated sexual life.

Some Other Rules

1. The practice of asanas and pranayama must be regular and systematic. Those who find time can practice pranayama twice a day (morning and evening). In the morning with an empty stomach or at least four hours after meal.

2. The mouth, teeth, nose, tongue, throat should be well cleaned before doing the pranayama exercises.
3. The pranayama exercises should be done in loneliness so that there is no disturbance. They should always be done with a well concentrated mind.
4. In practising pranayama, the body should not shake. It is very injurious.
5. While doing pranayama exercises tight clothes should not be worn. The clothes should be loose.
6. Women should not do pranayama exercises during the period of menses.
7. Too ripe and unripe fruits must be avoided.
8. Never practise pranayama when sick, tired or in sorrow. For in such a state of mind it is not possible to carry on pranayama with full concentration.
9. A person going to take up pranayama exercises must avoid, fear, anger, anxiety, too much sleep, too much wakefulness, idle talks, immoral acts and heavy physical work.
10. The ratio of 1:4:2 must be observed in pranayama. The ratio of 4 seconds retaining and eight seconds exhaling is rational and scientific.
11. The period of retention of breath should be increased gradually. In retention of breath lies the strength and vitality.

7

Asanas for Asthma

Asana is an important step of yoga-therapy. Asana is the international pre-planned systematic scheme of bodily movements and manipulations practised regularly for health and vitality yogasanas are suitable for everyone as they need the will to practise and some initial training under the supervision and guidance of an expert yogi. It has been observed that most of the practitioners while doing asanas do not observe the breathing control and concentration. Both breathing and concentration are important and what is more important is sequence. Which asan should follow which asana. In yogic literature asanas and pranayama have been praised for their efficiency. The practice of asanas and pranayama exercises eradicates many common diseases such as asthma, arthritis, diabetes, heart ailments, spleen diseases and nervous diseases. No disease can develop owing to the deficiency in functions of a single gland or of a single organ since other glands always make up for it. Diseases can show up when all the glands and arteries and nerves are affected more or less. No disease, therefore is only a local affection but a crisis of the entire body-system. Asanas are of two kinds—dhyanasana and swasthiyasana. Dhyanasanas are meant for meditation and swasthyasanas are those meant for perfect health. The asanas for perfect health

have their particular aim-of preserving the organic balance of the body and of protecting the same against diseases. Ladies should not practise asanas or pranayama during their monthly course and after three months of pregnancy. Yogasanas aim at the harmonious development of body, mind and soul. Different asanas have different effects on the organs, nerves and cells of the body. Every practitioner must keep in mind some basic important principles before starting asanas. Asanas must be practised regularly and punctually with faith determination and tenacity, without any interruption or distraction. It is much convenient and useful to practise asanas in the early morning hours. Breathing (inhalation, exhalation and retention of breath), concentration and sequence of asanas must be kept in mind before starting asanas. Asanas should not be done with tight dress or garments on the body. Spectacles, watch, waist belts, boots, brasiers should be removed while doing asanas while doing asanas breathing should be done through nostril and never through mouth. Except in simhasana eyes and mouth should remain closed. The body should remain active and the mind watchful and free from any worry, tension and unholy thought. After completing all the asanas, shavasan should be done last of all. Shavasan will give soothing effect and remove all fatigue and strain physical and mental. Persons suffering from high blood pressure, diabetes and heart ailments should avoid sarvanganasan. Women during the period of conception, menstruation, pregnancy and any female disorder should not do asanas or pranayama we are recommending here only those asanas which are useful for asthmatics. These asanas strengthen glands, tone up respiratory system and cure asthma and allergies.

1. Siddhasana (Adepts Pose)

Siddha in Sanskrit means adept. Yogis and Rishis have spoken high of this asana. Great saints and sages like Nityamatta, Niranjana, Kapali, Sabar used to meditate in this asana for hours together

Technique

Sit on the folded rugged or folded blanket on the floor, bend the left leg and pull the foot in against the groin. Now bend the right leg and bring the foot across and insert its outer edge in the crease between the calf and the thigh of the left leg. The right heel should press against the public bone and both the knees should touch the floor, keep the palms of the right and left hands on the back in a straight line.



Fig. 6.1: Siddhasana

Benefits

This asana develops mental potentiality, soothes the muscles, tones up the nervous system, increase the concentration, supplies sufficient blood to the pelvic region and keeps the body in poise and equilibrium.

2. Simhasana (The Lion Pose)

Simha in Sanskrit means lion. This pose appears to be odd, unpleasant but is very much rewarding and rejuvenating. In this asana alone breathing is done through mouth. This asana is held sacred by the best of yogis.

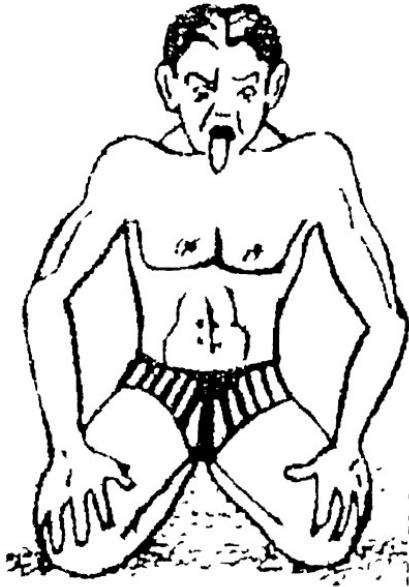


Fig. 6.2: Simhasana

Technique

Sit on a folded blanket with legs stretched straight in front. Raise the seat, bend the right knee and place the right foot under the left buttock, similarly bend the left knee and place it under the right buttock. The left ankle should be kept under the right one. Sit on the heels with

toes towards backwards and put the weight of the body on the thighs and knees. Stretch the trunk forward and keep the back erect. Place the right and left palms on the right and left knees. Open the mouth and eyes wide and protrude the tongue out and down as far as you can. Gaze at the centre of the eye brow at the tip of the nose. Remain in this pose for a couple of seconds.

Benefits

This asana will direct the flow of blood to the throat and larynx and will tone up the muscles of the face and throat. This asana is beneficial for thyroid gland. It can also increase the glow of the face and eyes and remove constipation.

3. Padamasana (The Lotus Pose)



Fig. 6.3: Padamasan

Padamasana is a unique pose for meditation, worship and prayer. It is called padamasana after the famous flower lotus. This asana needs sufficient suppleness. The

beginners may feel difficulty in doing this asana. But regular practice will make them perfect.

Technique

Sit on the folded blanket with your legs outstretched. Bend each leg and place each foot on the opposite thigh, soles turned upwards. Pull the foot as high as you can. Keep the palms of the right and left hand on the right and left knees. Keep the head, neck and spine straight and erect and breathe slowly.

Benefits

This asana increases the psycho-physical energies. It tones up the abdominal muscles and helps in proper functioning of the circulatory system. This asana also develops the mental and physical stability and cures rheumatism relieve stiffness of joints and muscles and improves respiratory system.

4. Vajrasana (The Thunder-Bolt Pose)

Vajra means diamond. As the name suggests this asana makes the body as graceful, as strong as diamond. It is the prayer pose of the Muslims and meditative pose of Budhists. This asana can be done any time. This is the only asana which can be done immediately after taking meals.

Technique

Sit on a folded blanket with the feet stretched backward. The knees should be kept together but heels apart, lower the buttocks inside the feet. The heels should touch the sides of the hips. Place the hands on the knees and palms downward.

Benefits

This asana is simple but beneficial. It brings tranquillity to the mind. It also cures disease such as

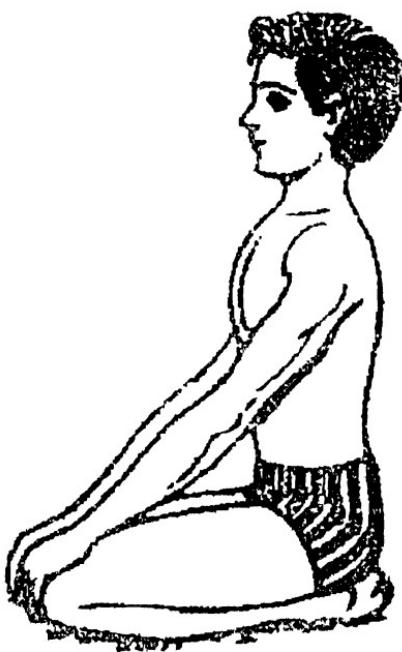


Fig. 6.4: Vajrasana

nervousness, indigestion, and urinary diseases. It can also remove head ache, acidity and weakness in the sexual organs and restores hope and self-confidence in man. This asana is very beneficial for a person suffering from respiratory ailments.

5. The Bhujangasana (The Cobra Pose)

This asana belongs to the category of sacrum asana. This asana is highly beneficial for persons suffering from backache particularly disc problem. People suffering from hernia, peptic ulcer and intestinal tuberculosis should not do this asana.

Technique

Lie flat on the stomach with legs straight and the feet extended. Place the hands, palms down under the

shoulders, slowly raise the body above the navel until the arms are straight but the stomach and the legs must touch the floor. Bend the head, back upwards. Remain in this pose for a couple of seconds. Breathe in while raising your head, retain breath for a couple of seconds and exhale while putting the head downwards.

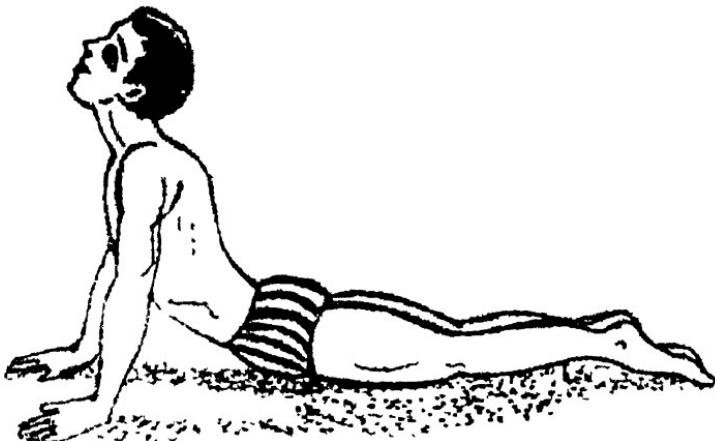


Fig. 6.5: Bhujangasana

Benefits

The Bhujangasna is one of the efficacious asanas for the spine and abdomen. It removes unwanted flesh from the hips, makes the spine supple and flexible., and tones up the nervous system and the muscles of the back. This asana also strengthens the adrenal glands.

6. Dhanur Asan (The Archer's Pose)

This asan is named after the archer. In this asan breath is inhaled while stretching up head and chest, breath is retained as long as head and chest are up. Then breath is exhaled when the head and chest are moved down.

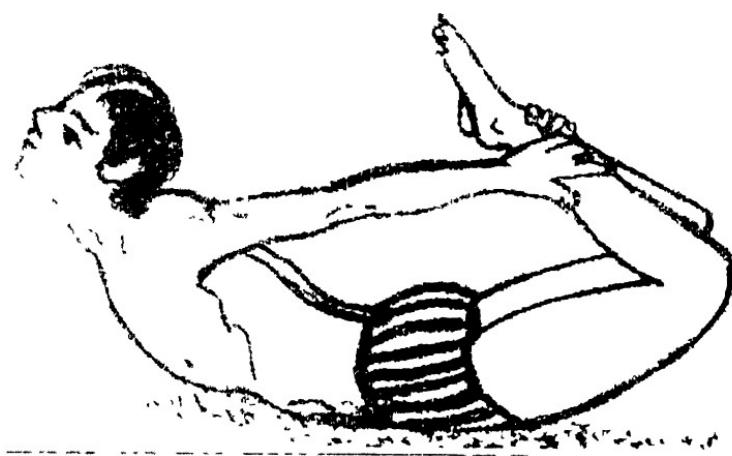


Fig. 6.6 Dhanurasana

Technique

On a folded blanket sit and stretch the legs forward place the right foot on the right thigh and grasp the right toe with right hand. Hold the left big toe with left hand. Keep the head, neck and spine straight. Repeat the process at least five times. Come to the original position and relax.

Benefits

This asana tones the muscles of the legs, arms, thighs and abdomen and makes the spine supple and flexible. It also strengthens biceps and ankles and tones up endocrine glands, thyroid and pancreas.

7. Mayurasan (The Peacock Pose)

In Sanskrit Mayur means peacock, when performed well, this asan resembles a peacock spreading its tail. This asan belongs to the advanced group of balancing posture. This asan should not be performed by persons suffering from hernia, high blood pressure and stomach ulcers.



Fig 6.7 Mayurasana

Technique

On a folded blanket, knees down, join the two arms together and rest hands on the floor, palms down with fingers pointing towards the toes. Keep the hands firm. Bring down the abdomen slowly against the joint elbows. Support your body on your elbows. Then stretch your legs, inhale and raise the legs together fro the floor, and remain in this pose for a couple of seconds. Exhale while raising the body off the floor and inhale while lowering the body.

Benefits

This asana improves the digestive system and circulatory systems. It also evacuates the waste matter from the Intestines and Eliminates toxins from the blood. This asana also tones adrenal glands, skin pores, skin cells and cures reactive skin diseases.

8. Hal Asana (The Plough Pose)

In Sanskrit hala means plough. This asana must be done after sarvangasana. Different theories for the promotion of health have been evolved from this asana by the yoga therapist.

Technique

Spread a folded blanket on the floor and lie down flat on the back with arms straight, raise them slowly above the head. Only stomach and abdominal muscles should be used to raise the legs. Bend the trunk upward hips first and slowly lower the legs over the head till the toes touch floor. Keep the legs straight. Now interlock the fingers and stretch the arms. The legs and hands are stretched in opposite direction. Breathe slowly without any strain. Remain in this pose for a couple of minutes. Return to the original position and relax.



Fig. 6.8: Halasana

Benefits

Halasana improves the functioning of endocrine glands, pancreas, kidney, liver. It makes the spine supple and strong, inhale breath while raising head up and retain breath. It cures diabetes, rheumatism, limbago, insomnia and constipation. It also stimulates thyroid and parathyroid glands.

9. Sarvang Asana (Shoulder Stand Pose)

In Sanskrit sarva means all and anga means limb or body. Sarvanga means entire body or all the limbs. By practising this asana all parts of the body are benefited. In this asana, circulation is directed towards thyroid and parathyroid glands which are important for the

promotion of health. The mal-functioning of thyroid gland can harm all other glands.

Technique

Spread a blanket on the floor and lie flat on your back. Then slowly raise the legs up lifting the hips. Let the elbows rest on floor. The chin should be firmly pressed against the chest. When the legs are raised breathe in. As long as legs are raised breathe in the air, retain breath for a couple of seconds and concentrate on thyroid gland which is at the root of the neck. Return to the original position and relax. When the legs are moved down breathe out slowly and rhythmically.

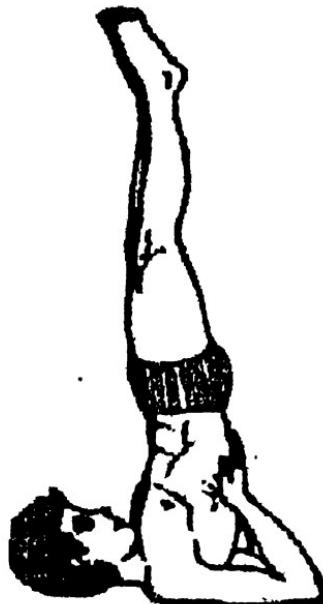


Fig. 6.9: Sarvangasana

Benefits

This asana has number of benefits. It rejuvenates all the organs of the body, strengthens the spine stimulates endocrine glands, tones up the nervous system and improves circulatory system.

10. Matsyasana (The Fish Pose)

The word Matsya means fish in Sanskrit. The origin of the name given to this asan appears to be strange because it does not bear any resemblance to fish. The Sanskrit texts give justification that this asana can allow one to float in water like a fish.

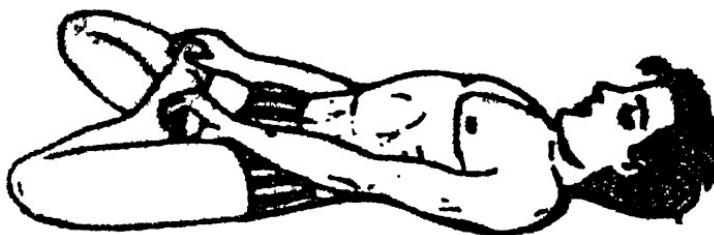


Fig. 6.10: Matsyasana

Technique

Sit in sukhasana or sidhassana on a folded blanket. Lie back, keeping the locked legs down on the floor. Support the body with the hands and elbows. Lift the head and the shoulders and arch the back pressing the crown of the head on the floor forming a bridge in which the shoulders and the back remain above the floor. Grasp the toes with both hands. Breathe deeply and retain breath for a couple of seconds and exhale breath slowly and rhythmically. Return to the original pose and relax.

Benefits

This asana strengthens the muscles and nerves of the neck and skin glands and pores. It tones up the entire nervous system and improves mobility of the thorax and supplies sufficient blood to the pituitary, thyroid and parathyroid glands. This asana cures skin diseases like Impetigo, Sycosis nuchae, Erysipeloids, Erythema and Eczema.

11. Salabhasana (The Locust Pose)

In Sanskrit salabha means locust. When the full and correct pose of this asana is displayed. It resembles a locust with its tail raised. In Bhujangasana, the body below the navel touches the floor but in salabhasana the process is reversed i.e., the upper body touches the floor.

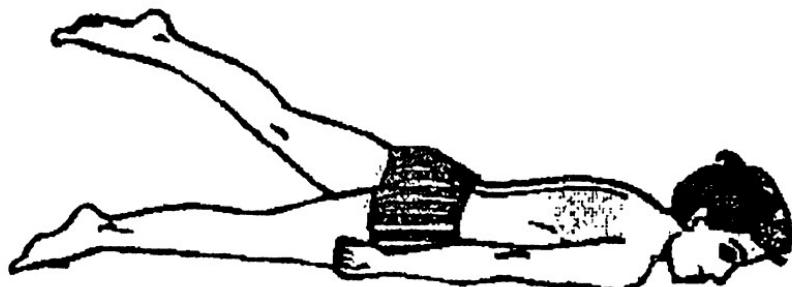


Fig. 6.11: Salabhasana

Technique

On a folded blanket on the floor, lie prone on the stomach and chest. The forehead and the chin must touch the floor and keep arms along side the body and legs extended together. Take a deep breath, clench the fists tightly and raise the legs together as high as possible without bending them. Exhale breath and bring the legs slowly to the floor. Remain in this pose for a couple of seconds, and return to the original position and relax.

Benefits

This asana strengthens the muscles of lower back, buttocks, heads and lungs. It removes fatty tissues from the waistline, stimulates the abdominal viscera, tones up the liver, intestines, pancreas, adrenal glands and kidneys. It is highly beneficial for persons suffering from

lumbago, chronic constipation insomnia dyspepsia, sciatica and asthma. It also helps normalise the menstrual cycle and extremities of thigh.

12. Naukaasana (The Boat Pose)

This asana is one of the simplest asanas belonging to the energy blocking group of asanas. Energy in the form of prana is in every part of the body. It must have free flow. Sometimes due to certain impurities of chemical reactions the free flow is blocked resulting in stiffness, rheumatism, and muscular tension.

Technique

Lie flat on the floor facing the sky with hands, clasped at the back. Raise your feet, head and the chest up as to form a curve on the floor, with your body resting on the abdomen. In this pose the body looks like a boat. Breathe slowly and rhythmically. When the legs and hands are raised, retain breath for a couple of seconds.

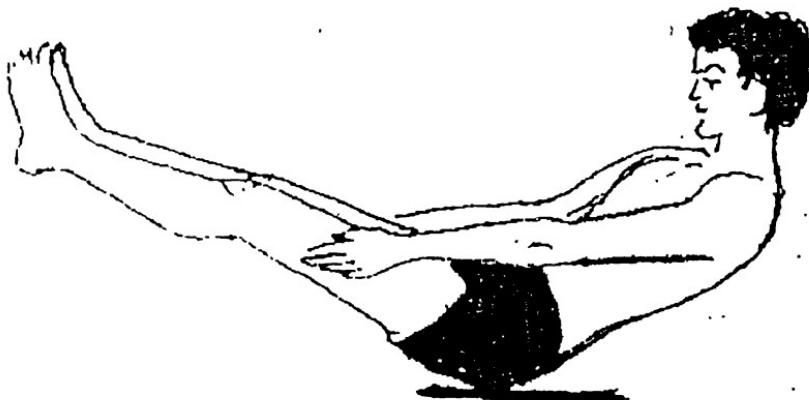


Fig. 6.12: Naukasana

Benefits

This asana eliminates the gas from the abdomen, cures belching. It also brings the dislocated naval plexus to its original position. This asana strengthens the muscles of the stomach and the back. It is very efficacious for asthma.

13. Pashchimottanasana (Stretching the Back and Hip Pose)

As the name suggests, this asana stretches the entire rare portion of the body. Jerky movements are to be avoided in this asana. This asana checks the ageing process, and is one of the powerful asanas for spiritual awakening.



Fig. 6.13: Pashchimottanasana

Technique

Lie flat on the folded blanket and stretch the arms over the head and breathe in slowly and normally. Raise the arms head and trunk exhale and bend them over the legs without raising the knees. Catch hold of the toes with fingers contracting the abdomen and gently

pressing the head against the knees. Pull up toes with the arms and lower the elbows. The bending should be done very slowly. Remain in this pose for a couple of seconds and increase the time gradually. Return to the original position and relax.

Benefits

This asana cures chronic constipation, piles, obesity, sluggishness of the liver, dyspepsia, diabetes, sciatica, belching and gastritis. It also tones up the muscles of the spine, abdomen. Stimulates thyroid and parathyroid glands. It also makes the body slim and tall., activates the kidney, liver, pancreas and adrenal glands. It also tones the pelvic organs and is especially useful for curing female sexual disorders, and helps normalise the menstrual cycle. Like shirshasana and sarvangasana, paschimottasana is the destroyer of all diseases and bestower of healthy life.

14. Shavasana (The Corpse Pose)

Shavasana is very important, powerful and popular asana. This asana is called "Mrita" Asana, "Shav", "Mrit" means corpse or dead body. Today when stress and strain of life are increasing rapidly, Shavasana is the only asan that provides relaxation to our psycho-physiological system.



Fig. 6.14: Shavasana

Technique

On a soft carpet or folded rug lie full length on back with arms away from the body and palms facing upwards and feet slightly apart. Close the eyes and mouth and withdraw the consciousness by stages, beginning with the feet. The ankles, the knees, the abdomen, the chest, the neck and the face. Finally keep the mind free. Start breathing deeply, slowly and rhythmically. The practitioner at the final stage of this asana should feel that his body is motion less like a dead body. In this asana all tissues, nerves and muscles are to be relaxed. The technique of this asana must be followed carefully. Deep breathing inhalation and exhalation are absolutely necessary for concentration which gives complete relaxation.

Benefits

Shavasna is an excellent asan for complete physical, mental and spiritual relaxation and refreshment. Tension, irregular breathing or faulty breathing can cause many diseases. This asana removes all mental tensions, stress and strain and stimulates the entire nervous system. This asana when performed correctly gives rest, peace, relaxation to body and mind and can remove backache and nervous disorders.

8

Yogic Diet

All forms of life, whether plant or animal, need certain basic elements to grow and to live. These basic food elements must be taken regularly. A human body consists of millions of living cells having different functions. Each cell needs proper care and nourishment. To ensure this we must select proper diet. Much depends upon the basic knowledge or the proper selection of diet which is source of vitality. Errors in diet can give many ailments and diseases. Human bodies have the power to fight diseases and illness, and replace worn-out tissues with new cells. It is only from our food that we can get the material for building bones, muscles, thyroid gland and red blood corpuscles need more of certain food elements than do other cells.

The corner stone of yogic diet is balance. Care should be taken to eliminate those items from the daily intake which are considered harmful in asthma. The most common items of diet for asthmatic patients are fruit, salad, leafy vegetables, and green vegetables. Some basic principles of eating, not to eat too hot, spicy, chillies, fried and roasted things smoking and alcohol should be avoided. Cigarette smoking and drinking are spreading like infectious diseases among the college and university students. For a college student the influence of home and friends cannot be ruled out. If

the parents of an average student drink the chances are fair that their children will also drink. Much can be said on the relation of alcohol and society. The price society pays for its alcohol indulgence is very high. Thousands are killed on the roads in accidents caused by drunken driving. Untold number of careers and families are ruined, divorce rates are increasing. The mental health of the drinkers go down the alcohol drain and life long severe emotional scares are left on spouse and children. The record is appalling in terms of human degradation shame, humiliation and suffering due to alcohol. By the frequent and long period of drinking, the drinker is dehydrated and in due need of food and water. He also needs medication to settle his inflamed stomach. As a result he suffers from nausea, headache, heartburn, thirst, tremours, giddiness. These symptom may be accompanied by insomnia, delirium, hallucination and convulsions. Chronic alcoholics may develop number of deformities and physical disorders. Liver damage may cause loss of energy, varicose veins, swelling of the feet, sexual impotence, jaundice, hepatitis (inflammation of liver) and cirrhosis. Moreover excessive drinking can develop hypertension and heart ailments. Chronic bronchitis is common among alcohol abusers. This can take the shape of tuberculosis due to lung infection. The excess of alcohol damages the blood vessels, kidneys, and mental cells. Two of the factors which have been responsible for support in crimes and alcoholism and the movies. The story goes that once Satan asked a man to steal his neighbours money, kill his own child and drive away his life. The man promptly refused. Then satan offered him an alcoholic drink. The man drank and committed all the crimes.

There is no place for smoking, alcohol, drugs and tamasic things in yoga. Yogic diet aims at harmonious development physical, mental and spiritual. It is

nutritious but not rich. A rich diet may produce diseases of the liver, kidneys and pancreas. A yogic diet increases stamina efficiency and vigour. Epicurians and gluttons harm both their health and yoga as well yoga practitioners avoid all narcotics, alcohol, drugs and smoke that stimulate senses. Our senses are like restive horses and they become uncontrollable by taking narcotics. Yogic diet is sattvic diet and lays stress on fresh, simple wholesome and nutritious diet. It is health building and energy producing food the famous saying of Hippocrates, "The food shall be thy remedy", is true for all ages and for all men and women. According to yogis diet is of three kinds i.e., sattvic diet, rajasic diet and tamasic diet. Lord Krishna says to Arjuna, "The food which increase vitality, energy vigour and which are bland are sattvic. The foods which excite passion and which are bitter, sour punjent, dry and which produce pain and disease are rajasic foods. The foods which are stale, tasteless, putrid and rotten are tamasic".

Yogic diet is full of proteins and vitamins. In yogic diet fresh green vegetables, fruits, curds and salad are consumed generously. Fruits and vegetables are the main source of vitamin C.

Dietary Sources of Vitamin C

Fruit :—	Mg. Per 100 g.
Amla	600
Guava	212
Lime	63
Orange	30
Tomato	27

Germinated Pulses :—

Bengal Gram	15
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Green Gram	16
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Vegetables :—

Amaranth	99
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Cabbage	124
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Spinach	28
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Cauliflower	56
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Potatoes	17
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Radish	15
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Onion	11
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Water—the elixir of life is a free gift of nature. Most of the diseases and physical ailments prevalent in under developed countries and due to unsafe and impure water. Drinking water should be safe and wholesome free from pathogenic agents. Water should be drunk neither too hot nor too cold. Water is essential for functioning of the circulatory and digestive system and for proper functioning of the kidneys. We should avoid drinking water while eating because such liquids dissolve the gastric juices and swell the stomach. A glass of water at bed time and on getting up in the morning will wash the organism.

9

Asthma and Diet

“Prevention is better than cure” is true for everyone. Asthma patients have to undergo the process of selection and rejection regarding diet. Allergies represent the abnormal reaction of an individual to the food he eats, the air he breathes or the substances he touches. Anything which produces an allergic reaction is known as an allergen. Food allergies may be defined as a sensitivity occurring in certain parts of the body to one or more specific foods. Usually the allergen is of a protein nature, but it is thought by some that carbohydrates, lipids and various chemicals may also be sensitizing agents on certain occasions. Any food may produce reaction in some individuals but the most frequent offenders are generally eggs, milk, wheat, orange, corn, tomato, and potatoes. There is some difference of opinion regarding some offenders and clear cut diagnosis is difficult to establish. Allergic reaction may be brought about by various means as :—

1. By ingestion of food and drugs.
2. By contact with foods, pesticides, adhesive, fur, hair, feathers etc.
3. By inhalation of pollens, dust, cosmetics, and perfumes.
4. By injection of vaccines, serums.

Some individuals are only mildly sensitive and can eat a particular food for several days before some symptoms develop, while others have violent reaction within a couple of hours. Allergies appear to be closely related to one's physical and emotional status., reaction to a substance may occur in a stress situation but may not occur at another time. Heredity appears to play a role in allergy, but one does not inherit a sensitivity to a specific substance not to an identical manifestation of the allergy. For example, a child born of a parent who suffers from asthma may not develop asthma, but may have eczema or some gastrointestinal disturbances. The parent may be sensitive to wheat and the child to egg. The skin and mucous membranes are particularly sensitive to the offending substances. Since the substances may be carried by the circulation to all parts of the body. It is expected that the manifestation will be varied. Skin lesions such as urticaria, nettle rash and eczema are among the frequent symptoms of allergy. Nausea, vomiting and diarrhoea are gastrointestinal manifestations. Head colds, asthma and headaches may be caused by allergies. Redness, swelling, burning the itching of the eyes may occur.

The use of a diet consisting of milk, egg, wheat, oranges has been described by Lee and Squier. "This diet is given for one week unless the patients previous history disallows its use. Since the foods are commonly involved in allergies, any disturbances are likely to show up within a week. Food allergies may sometimes be diagnosed quickly by means of synthetic diets. Such diets are made up of amino acids, sugar, salt mixture, vitamin concentrates, water and in some cases emulsified fats, none of the constituents will produce allergy. The feeding is given by mouth or through a tube inserted into the stomach. Patients who are allergic to food, show marked improvements with the synthetic diet.

If it is ascertained that food is responsible for the allergy, the feeding can be continued for a longer period of time. Various systems of diet are to be eliminated such as pickle, sweets, fried or roasted things, chillies, cold drinks and ice cream. The successful use of the diet depends on a strict adherence to the non-allergen foods. Restricted diet is very essential for persons suffering from asthma and allergies. If improvement has occurred on an elimination diet, foods may be added, one at a time. Moreover, a given food should be tested on different occasions before it is permanently used or eliminated from the diet. It is possible for an individual to eat a food which appears to be wholly unlike the one to which he is allergic. This is explained by the fact that many foods unlike in favour and structure belong to the same botanic group which includes rhubarb. The sweet potato is not related to the white potato but is a member of the morning glory family. Dietary adequacy becomes a matter of great concern when important foods are rejected for a long period of time. For example, if milk cannot be used, additional amounts of soyabean may be included to provide necessary amounts of protein and calcium. Desensitization consists in decreasing the sensitivity to a given substance by giving small doses of allergen in gradually increasing amounts. This procedure is useful in those cases where a major food such as milk or egg is involved. No hard and fast rules can be laid but the initial doses can determine the degree of reaction.

Foods are responsible for the majority of allergies in children. The chief offending foods are milk, egg, wheat, orange, and white potato. When the child is young it is easy to determine which food is responsible for creating allergy. If milk is the allergen it is necessary to change the form of the milk. In some cases goat's milk may be an effective substitute for cow's milk. Where the symptoms of allergy are mild, one must consider the

relative importance of the allergic disturbance and the diet of the child. For older children and diagnosis of allergy is accomplished by means of skin tests and the restricted diet.